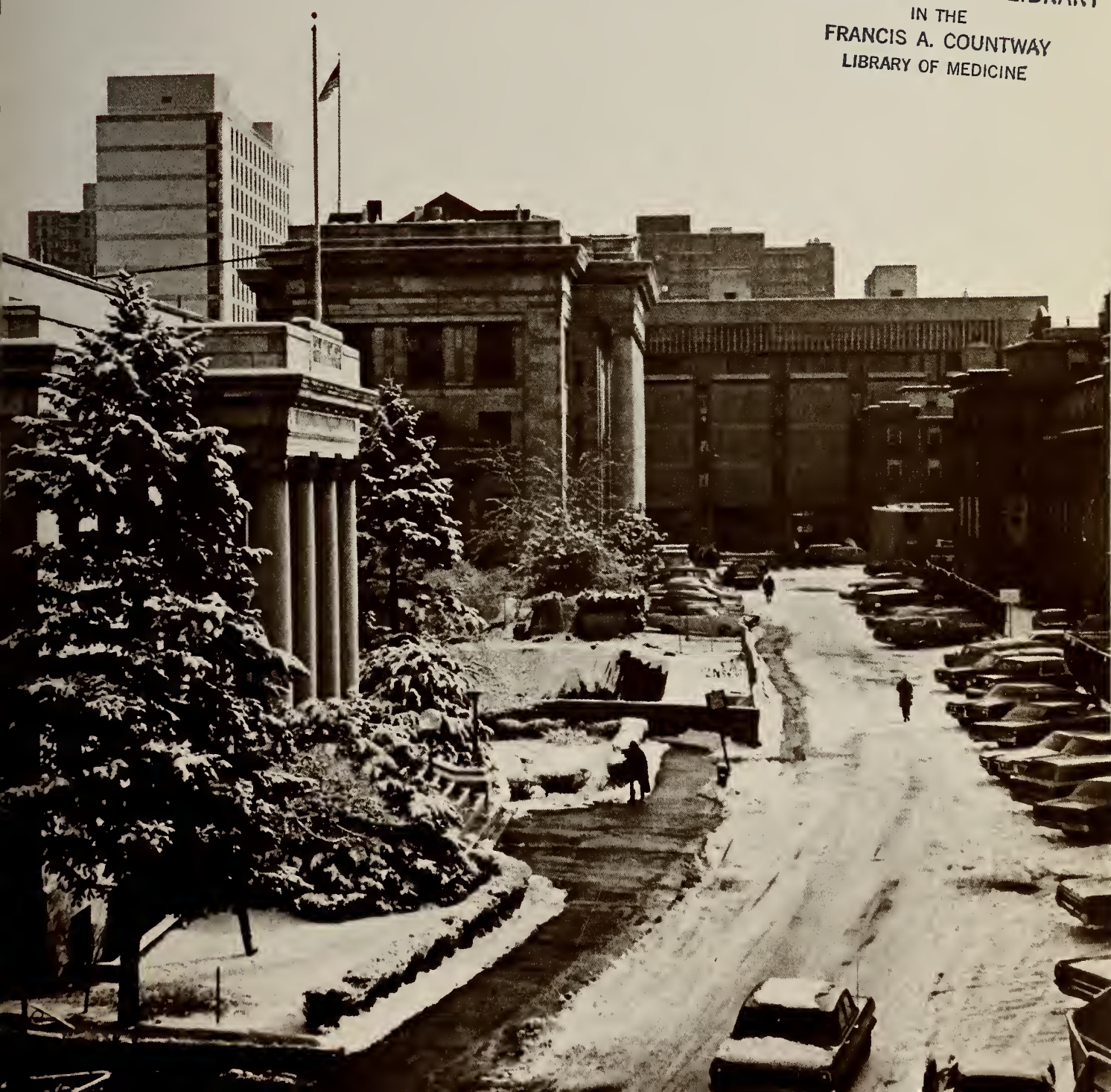
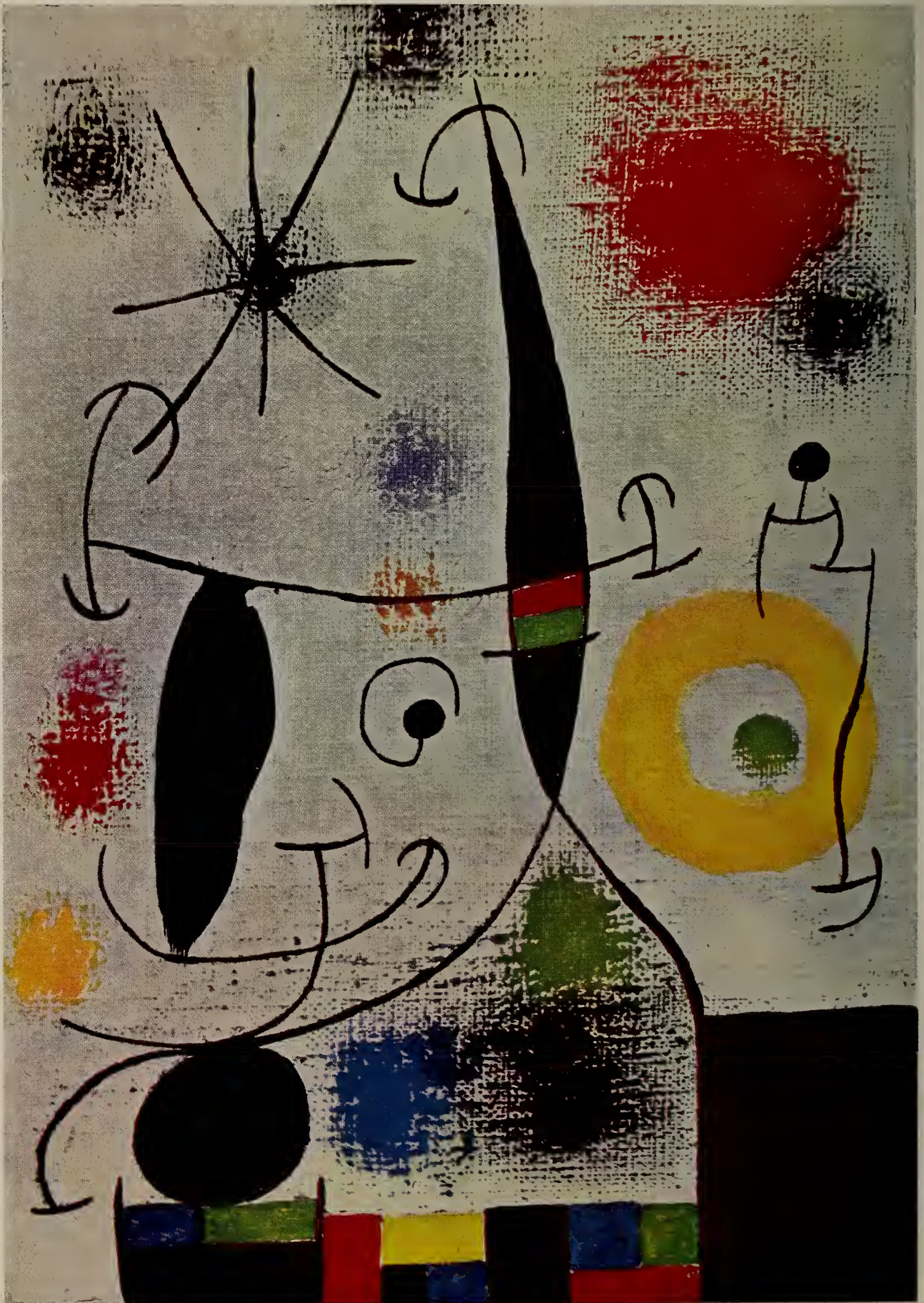


HARVARD MEDICAL ALUMNI bulletin

HARVARD MEDICAL LIBRARY
IN THE
FRANCIS A. COUNTWAY
LIBRARY OF MEDICINE



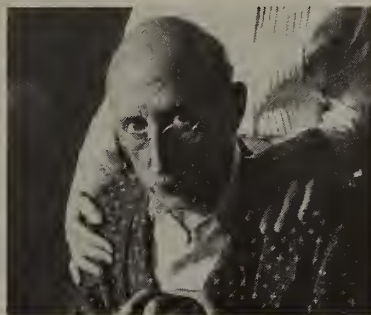
Painted by Miro at age 75



Reproduction of "Le réveil d'Irene," from the Pierre Matisse Gallery. For a full-color reproduction of this painting, please write on your letterhead to Roche Laboratories.

Later years can be productive years

Librium®
(chlordiazepoxide HCl)
begin with 5 mg b.i.d. or less



Aid to therapeutic progress in the anxious geriatric

Not everyone can be a Miro. Your practice probably includes more of the anxious, "lost" elderly than the creative or productive. At this stage of life, patients often look to their physicians for reassurance as well as for medical help. Their anxiety and apprehension may be manifested by somatic dysfunction or by aggravation of a true organic disorder. And emotionally overreactive geriatric patients may fail to eat and sleep properly.

Librium (chlordiazepoxide HCl) can help relieve excessive anxiety, help modify the patient's reaction to

losses and adjustments entailed by old age and help encourage cooperation in rehabilitative measures. In elderly patients begin with an initial dosage of 5 mg *b.i.d.* or less, increasing gradually as needed and tolerated. For those who are plagued with insomnia due to persistent anxiety, a Librium capsule or Libritabs® (chlordiazepoxide) tablet *h.s.* as part of the dosage schedule may help induce needed relaxation and promote sleep.

Known for safety record. Librium has a wide margin of safety. In proper maintenance dosage, it

generally does not unduly interfere with mental acuity or ability to function. The necessity of discontinuing therapy because of undesirable effects has been rare. Drowsiness, ataxia and confusion have been reported in some patients, particularly the elderly and debilitated. While these effects can be avoided in almost all instances by proper dosage adjustment, they have occasionally been observed in the lower dosage ranges. In a few instances, syncope has been reported.

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Indicated when anxiety, tension and apprehension are significant components of the clinical profile.

Contraindications: Patients with known hypersensitivity to the drug.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards.

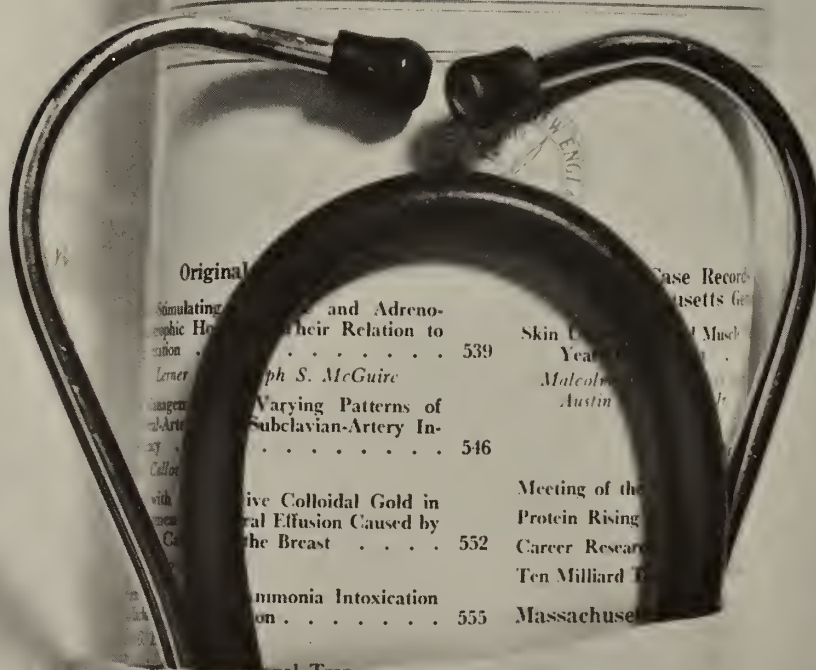
Precautions: In the elderly and debilitated, and in children over six, limit to smallest effective dosage (initially 10 mg or less per day) to preclude ataxia or oversedation, increasing gradually as needed and tolerated. Not recommended in children under six. Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (e.g., excitement, stimulation and acute rage) have been reported in psychiatric patients and hyperactive aggressive children. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: Drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally, making periodic blood counts and liver function tests advisable during protracted therapy.


Roche
LABORATORIES
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

The New England Journal of Medicine

Established in 1812 as The NEW ENGLAND JOURNAL OF MEDICINE AND SURGERY



For more than 155 years, The New England Journal of Medicine has played its role in medical circles—reporting the progress of medicine to physicians and medical students throughout the world.



The New England Journal of Medicine

10 SHATTUCK STREET, BOSTON, MASSACHUSETTS 02115

JOSEPH GARLAND '19
Editor

25 SHATTUCK STREET
 BOSTON, MASS. 02115

JOAN F. RAFTER
Associate Editor

CAROL M. DZINDZIO
Assistant Editor

MILTON C. PAIGE, JR.
Advertising Consultant

MEDIAREP CENTER, INC.
 1127 STATLER OFFICE BUILDING
 BOSTON, MASS. 02116
 (617) 542-7720
Advertising Representative

EDITORIAL BOARD

ROBERT W. BEART, JR. '71
 HERRMAN L. BLUMGART '21
 ERNEST CRAIGE '43A
 PAUL J. DAVIS '63
 ROBERT M. GOLDWYN '56
 FRANZ J. INGELFINGER '56
 HOWARD S. KIRSHNER '72
 JEAN MAYER, PH.D.
 MICHAEL B. MILLIS '70
 LEE M. NADLER '73
 JOHN C. NEMIAH '43B
 GEORGE S. RICHARDSON '46
 J. GORDON SCANNELL '40
 HOWARD B. SPRAGUE '22



ASSOCIATION OFFICERS

JAMES M. FAULKNER '24, *President*
 F. SARGENT CHEEVER '36
President-Elect
 OLIVER COPE '28, *Past President*
 BRADFORD CANNON '33, *Vice President*
 WILLIAM W. BABSON '30, *Secretary*
 CARL W. WALTER '32, *Treasurer*

COUNCILORS

HENRY F. ALLEN '43A
 JAMES A. CAMPBELL '43B
 EDWIN F. CAVE '24
 CARLETON B. CHAPMAN '41
 JOHN B. HICKAM '40
 JOHN C. NEMIAH '43B
 CHESTER M. PIERCE '52
 CURTIS PROUT '41
 JOHN A. SCHILLING '41
 LEONARD W. CRONKHITE, JR., '50
*Representative to
 Associate Harvard Alumni*

CONTENTS

COVER: "With ruin upon ruin, rout on rout, Confusion worse confounded." *Paradise Lost*. Confusion is worse confounded on Shattuck Street as Harvard begins construction of its Laboratory of Human Reproduction and Reproductive Biology (boarded area). See story on page 26.

TEACHING AND LEARNING IN THE PRECLINICAL YEARS	4
<i>by Richard E. Burney, Jr. '69</i>	
TUFTS UNIVERSITY SCHOOL OF MEDICINE	9
<i>by William F. Maloney, M.D.</i>	
IN DEFENSE OF MEDICAL RESEARCH	16
<i>by Saul Benison, Ph.D.</i>	
EDITORIALS	24
ALONG THE PERIMETER	26
PROMOTIONS AND APPOINTMENTS	28
STUDENTS	29
ALUMNI NOTES	32
LETTERS	38
DEATH NOTICES	39
WILLIAM D. SMITH	40
CHARLES H. JAMESON	41
HUGH L. ROBINSON	41

CREDITS: Cover, Bradford F. Herzog. Dan Bernstein Photography, p. 11, 13, 14. The Bettmann Archive, Inc., p. 19, 22.

*The opinions of contributors to the Bulletin do not
 necessarily reflect those of the Editorial Staff.*

© HARVARD MEDICAL SCHOOL ALUMNI ASSOCIATION 1970

LANGDON PARSONS '27
Director of Alumni Relations
 DOROTHY A. MURPHY
Associate Director

TEACHING AND LEARNING IN THE PRECLINICAL YEARS

by RICHARD E. BURNEY, JR. '69

THE last time that the general subject of "medical education" provided the theme for a Boylston Society presentation was more than two years ago, when John Wesley '67 gave eloquent testimony to "The Impetus for Change in the Harvard Medical School Curriculum."¹ Since that time teacher and student alike have witnessed a general reassessment of the goals and structure of this medical school's curriculum, with attempts to adjust to both the changing talents of the medical school applicant and the changing medical needs of society.

The manifesto for this revolution was the report of the ad hoc Subcommittee on Curriculum Planning submitted to the Faculty of Medicine on September 30, 1966, and published by the Office of the Dean a month later. In this document specific reference is made to the need for reassessment and creative planning in yet another area, teaching: "It is hoped that much thought will be given as well to teachers and techniques of pedagogy. The best intentions and schedules are of no avail if the teachers fail in their mission."² It is to this endeavor that I would like to suggest an approach.

In analyzing this complex subject, chaos is avoided only by the early establishment of a perspective. The perspective I have used is achieved by asking the simple question, "What's going on here, anyway?". What is going on? What are the every day activities of medical school where the teaching and the learning are done? They are three: lectures, labs, and evaluations.

I would like to examine these three activities of the "preclinical

years" by first outlining some of the hypotheses of instruction theory as proposed by Professor Jerome Bruner of Harvard University in his book, *Toward a Theory of Instruction*,³ (with special emphasis on chapters 3, 6, and 8) and to a lesser extent by Professor George Miller of the University of Illinois in his book, *Teaching and Learning in Medical School*.⁴ It is hoped that some light will be shed on the process of teaching and learning by the application of cognitive theory.

THE WILL TO LEARN

There has always been much talk about how well-motivated the medical student is (or must be). Perhaps the best way to begin is to attempt to define the motivations to learn. Bruner divides them into the categories intrinsic and extrinsic, and it is to the intrinsic motivations that he ascribes the power behind the will to learn.⁵ The intrinsic motivations that he cites seem particularly, if not uniquely, applicable to Harvard medical students.

The first of these is curiosity, which I would define in simple, functional terms as the capacity to sit through even the dullest presentation and afterwards deem it "interesting," because it covered new ground.

The motivation to achieve competence is the second, providing the eagerness to take on responsibility and demonstrate initiative, which I found characteristic of my classmates. They liked to be good at doing the real thing and were impatient for Principal Clinical

Year to start. Boredom supervened whenever it was clear that the classroom exercises were clearly only that. When a relevant challenge was presented, there was never a lack of enthusiasm.

The third intrinsic motivation is the aspiration to emulate a model. Eric Erikson calls it "identification." To believe this search really exists at the post-graduate level one need only stop to consider how much student time is spent analyzing faculty personalities and seeking heroes. The natural outgrowth of this aspiration, however, is that some faculty by their very presence present an unspoken challenge for excellence that is stronger far than any spoken demand to work harder.

The fourth is a sense of commitment to the web of social reciprocity, the desire to interact in socially helpful ways. In the broadest view, the study of medicine provides the tools and format for a particular kind of social interaction — that of the doctor and his patient — which will occupy the major portion of the medical student's time, probably, for the rest of his life.

What then are extrinsic motivations and what are the relative roles of intrinsic and extrinsic motivations with respect to learning in the preclinical curriculum? Bruner postulates that in the acquisition of basic skills of learning and self-education the intrinsic motivations greatly outweigh the extrinsic. I am not sure that we will be able to agree with so categorical a statement.

Extrinsic motivations are the classical prods applied to children of educationally bovine demeanor: grades, rewards, and similar stimuli to continued effort. At my prep school the single strongest extrinsic motivation to get good grades was the extra day or two of vacation that a high grade point earned. In the most general sense, medical school itself is an extrinsic motivation, as are the formal arrangements which make up the routine of school life. For efficient teaching, one cannot do without them, because perhaps their most important role is in the

introduction of new material. They invite one's attention. But extrinsic motivations work best in the short term only. They must not persist to the obliteration of the intrinsic system which provides stimulus for the continuing education of the physician, makes learning fun, and contributes ultimately to peace of mind.

In the final analysis, however, the relationship of intrinsic and extrinsic must be defined on a personal level. It is for the teacher to recognize that despite their importance, when emphasized too much, extrinsic motivations cannot be tolerated and will evoke rebellion. Long-term learning depends upon the fostering of the intrinsic motivations, which takes time and requires a certain basic faith in the student's will to learn. Professor Bruner assures us that this faith is justified.

THE LECTURE

Lectures are things that first and second year students complain they have too many of and fourth year students who have had to glean pearls from the vast fields of clinical clams sometimes wish they had more of. Since they are the mainstay of preclinical teaching, and will likely remain so, it behooves us to look at this thing called the lecture.

The lecture is unique in the realm of communication because it can be at once spontaneous, dynamic, immediate, and personal. The human voice (at least initially) commands attention. Shades of meaning, flashes of understanding, overtones and implications, can be conveyed by the intensity, inflection, and pitch of the human voice. There is opportunity for drama in the pauses, the questions, the revelations, and there is flexibility for the construction of visual imagery, models, or diagrams. Moreover, there is the chance to isolate strains of thought, an endeavor greatly inhibited by the printed page. Unfortunately, it is the rare lecturer who uses all the tools

at his disposal.

But why do we have lectures in the first place? After all, they are remote happenings, usually far removed from the action they purport to be discussing. Bruner provides insight into this question in the last chapter of his book, in which he discusses some of the complications which complex, modern societies have imposed upon the process of teaching and learning. In agrarian and pre-industrial societies, father taught son and the apprentice learned his trade at the side of the master craftsman. The recent rapid increases in both information and population radically altered that pattern. It became necessary for children to be entrusted to an intermediary third party for "schooling" which prepared them for a postponed but more sophisticated advent into society.

We find a similar sequence of events in the history of medical education. As the volume of information that has come to be called "basic science" grew and became recognized as an essential part of the education of the physician, it was isolated from the clinical area for the purposes of teaching it more efficiently. But this separation introduced certain complications that the lecturer must understand and face.

The first is that relevant context is no longer immediately at hand. The lecturer is telling out of context rather than demonstrating in context. In addition, as subjects become bigger and more specialized, they develop their own classifications of subject matter and intellectual dialect, and it is the "way of thinking" within these classifications and dialect, the psychology of the subject matter, which is often the first barrier to learning. Inevitably, a conflict torments the mind of the instructor who, while trying to communicate the intellectual unity of his subject as a whole, is prevailed upon to "keep it relevant." Compromise becomes necessary.

It is important to attempt to keep in context or to provide context. The correlation clinics of the

first year provide important perspective in this respect, as does the physical diagnosis course in the second year, taking some of the burden off the lecturer. One thing that individual lecturers can do is to try to keep abreast of the students' level of knowledge and interest. One of the simplest ways to do this is to talk to students and instructors before and after lectures, sounding them out as well as listening to them. For the same reasons, course instructors should try to attend all lectures.

Providing a way of thinking also requires both thoughtfulness and work on the part of the instructor. There are two aspects of this task that I would like to consider. First, the hypothesis that supports the value of communicating a "way of thinking" argues strongly against what I call the "passive descriptive" lecturer, who relays facts but little else. How exasperating it is to listen to the man who covers all the material but stresses none, tells what to see but not what to look for, gives out the facts but not how to know them, imparts an abundance of information but a paucity of wisdom. Second, special care should be exercised in the selection of diagrams, slides, examples, etc., the components of one's communication system, to keep them clear, relevant, and meaningful to both the lecturer and the listener.

Having related the lecture to the business of teaching, we must now define its proper relationship to the process of learning. One principle can guide us: knowledge is personal. It is the student who is doing the learning. The knowledge he acquires becomes his own in a unique and individual way, an integral part of his own personal, educational experience. By this definition a man's knowledge is that information and those concepts that he has worked on, used, and made his own; those readings, lectures, and exercises that he has integrated into his personal intellectual armamentarium.

Accepting this hypothesis, we can see that although the lecture is perhaps indispensable as an efficient,

dynamic, interpersonal, external motivation and information source, it is unsuited to the task of personalizing knowledge. The lecturer must guide the student, excite his curiosity and awareness, give him a start, but the lecturer cannot learn for the student by telling to him. The lecturer who tries to cover everything, or his colleague who does not cover everything but requires one to know for examination purposes only what was covered in lecture, does the student a disservice, because he narrows the student's horizon and denies him the opportunity and the responsibility to begin to educate himself by going beyond the confines of the lecture and making his knowledge personal.

Before leaving the subject of the lecture, we must look briefly at the "lecture service." It reflects the marked dependence (for whatever reasons, whether good or bad) of the student on the lecture and the belief that every lecture is important. We do not have time here for a full-length critical discussion of the lecture service. Suffice it to say that as long as it fulfills a need, it will be used; and as long as it is used, it will continue to exist. But insofar as the lecture is inadequate to the task of providing knowledge, so is the lecture service.

In summary, let me emphasize that I do not wish to deny the lecture the job of getting information across, but I wish to point out that context, a way of thinking, and guides to the pursuit of further knowledge are also important objectives.

The Laboratory

To understand the "laboratory" as we now know it in the preclinical years (biochemistry and physiology excepted), one must go back to the early 1950's when the integrated approach to teaching was first being developed at Western Reserve and Harvard. An article by former Dean George Packer Berry

that appeared in 1953⁷ describes this new plan permitting many different kinds of work to be concentrated in one multidiscipline, integrated lab, a "home" where the student might learn simultaneously from many areas in one location. This "home" (for HMS II's) in Bldg. D, now 15 years old, despite being a little dingy and more than a little cramped and uncomfortable, lacking in blackboard space, demonstration areas, and equipment storage facilities,⁸ has in the fulfillment of Dean Berry's plan become a place for all seasons. Its occasionally forgotten primary objective, like that of the lecture, is to help the student learn.

We, as students, always appreciated the laboratory instructor (or lecturer, for that matter) who was well-prepared, who knew the material to be covered, who had well-defined objectives that were appropriate (we have all seen the man who comes with his box of dusty slides and spends an hour remembering last year's lecture or instruction session), who talked to us (not at us), and who was not afraid. But putting specific complaints aside for the moment, let us examine the laboratory session from a more theoretical point of view.

The real purpose of the lab seems, in retrospect, to have been to give the student a place to exercise, in close proximity to an instructor, the skill he was being directed to acquire, whether it might have been identification of a pathologic process under the microscope or a pattern of pathophysiological deduction in the discussion of a CPC. However, student-instructor interactions were often poorly defined (or so it seemed). Bruner sheds much light on their importance when he states:

The relationship between one who instructs and one who is instructed is never indifferent in its effect upon learning. And since the instructional process is essentially social — particularly . . . when it involves . . . a teacher and a pupil — it is clear that the child (and the instructor) . . . must

have minimal mastery of the social skills necessary for engaging in the instructional process.⁹ (Parentheses mine)

One example stands out in my memory. During one of the blocks in pathophysiology in the second year, one set of lab instructors failed to introduce themselves. The effect of this lapse at the most basic level of social protocol was to paralyze instruction for most of the three week block.

I shall not try to specify the kind of behavior that is most appropriate in the lab, because I cannot and should not; it depends upon the personalities of the people involved and upon what is being taught. But we should recognize that appropriate behavior (whatever it might be) frees for classroom benefit the energy that might otherwise be consumed in anger, frustration, or anxiety, relieves boredom, and makes the work more fun.

In his discussion of "the form and pacing of reinforcement," the most important idea which Bruner introduces is the concept of "corrective knowledge" — the right information in the right place at the right time. The answer provided for a pressing question will be better learned and will provide renewed stimulus to ask new questions and seek more information. The instructor is not, of course, the sole source of corrective knowledge in the laboratory. (If he were, the "laboratory" would be a "classroom"). Sometimes the student must discover the corrective knowledge for himself.

To assist the student in this effort the instructor can provide him with problems to solve. The beauty of problem solving lies in its unique property of realizing many goals at once. The student satisfies his will to learn, context is provided, knowledge personalized, and a way of thinking won. The predisposition is strong and corrective knowledge supplied immediately as feedback.

If a student is not problem solving, according to Bruner, he is usually occupied with "problem finding" — an attempt to supply the

relevant question to which the information to be assimilated constitutes the answer. Any presentation is easier to comprehend if the presupposed question which underlies it is clearly understood. Often this question is obvious, but all too frequently once finds himself asking, "What is the instructor talking about? What question is he answering?" It is at these times that the presupposed question has been missed, resulting in the loss of relevance and perspective.

When forced, the student may turn from this constructive kind of problem finding to a distracting variant of this activity wherein the question he asks is not, "What is the instructor talking about?" but, "What (answer) does he want?" (This variant has been called by some the "What am I thinking game?"). The dangers here are twofold. Logical endeavor by the student gives way to guessing, and anxiety, which is singularly and powerfully disruptive of the capacity to work, think, and learn.

But the process of learning consists of more than problem solving or problem finding. These are merely endeavors that we can recognize and isolate easily. Moreover, the course of our education depends only in part on the shores toward which we are directed. All will, I think, concede the propensity of the student's sailboat to tack into the winds of instruction. Nevertheless it is important to be able to chart the student's course, and to do this one must be able to evaluate his teaching and learning.

EVALUATION

The concept of "evaluation" is poorly understood and much misused by student and faculty member alike. As a recent graduate, I can clearly recall that one of the great frustrations of medical school was the struggle to "evaluate" almost everyone and everything. The concept of evaluation, however, was never

well-defined in my own mind, and as students we were far from certain of what we were doing in our "curriculum committees." As a novice teacher now, I am beginning to see the faculty side of the story, but solutions to the frustrating questions do not become immediately clear once roles change. On the contrary, my mind has been filled with even more challenging questions about what I am trying to achieve in my didactic interactions with students, and how evaluation can help me better determine what they want and what they need. Before I have forgotten what it is like to be a student in medical school and while the experience of being a teacher is still fresh and provocative, I would like to try to organize some ideas (not all mine*) and formulate some principles that may help to define this complicated concept, evaluation.

When one thinks of "evaluation," one first thinks of grades, of exams, of those exercises on which one receives a grade. It is unfortunate that the word "evaluate" connotes this kind of quantitative value judgment, because it is this connotation that limits the scope of the term in our minds, and makes it difficult for us to conceptualize the true role of evaluation in education, which is both more extensive and more inclusive than one is accustomed to thinking. We must put aside this connotation of quantitative judgment and open our minds to accept a broader concept. Let us begin by asking some basic questions.

What is the purpose of evaluation? As we have postulated, it is more than the provision of a quantitative index of achievement. What role does evaluation play in the education of the student?

What is the role in evaluation of examinations and other exercises on which one is graded? What other pathways are available to us? Can we conceptualize these pathways

thus giving perspective to that entity called the exam?

Is it only the student who is evaluated? We know that this is not the case, for faculty, too, are subject to evaluation, as are curricula. Is there then a relationship between these different kinds of evaluation? Can this relationship help us formulate a theory of evaluation?

What are the criteria by which we evaluate?

Finally, when is the best time to evaluate? Is the questionnaire that is circulated at the end of the course the best contribution we can make toward evaluation with respect to that course? Can we evaluate courses before they begin? The answers to these questions can be found in the principles outlined briefly below.

The primary goal of evaluation is the furthering of the student's education.

There are three assumptions behind this statement. The first is that the student is indeed motivated to learn. The second is that his career goal lies within the realm of what one is teaching. The third is that the medical student is mature enough to direct his own education when given the proper environment. The role of the teacher is to provide that environment and to help the student learn. Evaluation is a part of that environment. Medical school instructors cannot teach the student to be a doctor, *they can only help him learn to be one.*

At once one can see why it is so difficult to assist the education of the man who is not sure where he is going or what he wants. For him, evaluation breaks down. His contribution is absent. It is entirely possible that this man can perform quite capably in quantitative terms, and receive good grades, but his learning is compromised because evaluation is not fully available to him.

Similarly, the instructor who does not give leeway to the student who has direction frustrates evaluation. The instructor must avoid at all costs the ever present temptation

* Again many of the ideas found here are taken from *Toward a Theory of Instruction* by Jerome Bruner.

to remake the student in his own image.

Evaluation requires and is part of active, free, and open communication of all types between faculty and students.

Evaluation derives from communication. Whenever there is an interaction between students and instructors — lectures, labs, seminars, conferences — there is the opportunity for evaluation to work. An examination is, in the abstract, a form of communication. Evaluation is a learning experience and every learning experience involves evaluation.

The examination should be the vehicle, par excellence, of evaluating, because it is composed of directed communication from instructor to student and back. In an exam, the student can evaluate his progress in the light of faculty criteria (i.e. questions) while the faculty can assess the progress of the student toward the objectives they have established, and to some extent determine how successful they have been in their guidance. In order to accomplish these objectives, exams should reflect course objectives and provide (ideally) an opportunity for students to demonstrate an understanding of the course material and a competence in handling problems derived from that material (i.e. how much they have learned rather than how much they have been taught) in such a way as to reinforce their own educational motivations. To achieve this objective is of course one of the most difficult challenges to the educator.

Evaluation is a two-way street and must be open at all times in both directions.

The same process that enables the student to evaluate himself (as he must) and the curriculum (as he is asked to do) and the faculty (as it would be hard not to) should also enable the faculty to make the corresponding assessments.

Last spring Hermann Lisco, associate dean of student affairs, organized an informal meeting between a physician who wished to in-

itiate an elective period course and several third and fourth year students who might be interested in taking such a course. There was an hour and a half of open-minded dialogue and student faculty communication, from which came an important understanding on the part of the physician of what he really wanted to offer (and his misconceptions of student interest and sophistication) and on the part of the students of what they might want to learn from such a course (and their misapprehensions). On both sides, goals were established and reasonable objectives formulated. There is no question that this course, if offered, will be better than originally planned because evaluation was begun promptly and used properly.

Evaluation requires the proper frame of reference.

The student can evaluate himself only with respect to someone or something else: instructors, physicians, curricular demands, the goals he has set for himself. Instructors can evaluate themselves only with respect to student progress. Many of the most valuable frames of reference are not provided knowingly: inspiration often knows no logic. It is important that they not be too narrow or narrow-minded, nor inappropriate. The student must be judged with respect to how much he is learning rather than how much he knows.

Evaluation must be ongoing and contemporary.

Evaluation should provide impetus, direction, and perspective throughout the learning experience, and not, as we so often see, just sour grapes at the end. The role of evaluation is to guide the student in his pursuit of learning.

The crucially important benefit of this kind of evaluation process is that it nurtures in the student his own ability for constructive self-evaluation by requiring him to define his objectives in the face of career goals and faculty offerings as he goes along. It is important to stimulate this self-evaluative function early because it is one of the forces that

will sustain the continuing education of the physician during his career.

These five principles do not stand independently one from another, but interlock tightly into a unitary concept, whose keystone is communication. Without that, all evaluation is doomed to failure.

In closing I would like to offer a perspective that has aided me in thinking about matters of medical education, and answers the question I posed at the beginning of this paper:

What's going on here?

The student is learning, the teacher is helping.

Dr. Burney is an intern in surgery at Yale-New Haven Medical Center. His article was originally presented as a Boylston Society paper last winter. The section on evaluation was written after his graduation.

FOOTNOTES

1. John Wesley, '67, *Harvard Medical Alumni Bulletin*, 42, 4, Spring 1968, pp. 4-10.
2. Report of the Subcommittee on Curriculum Planning (Alexander Leaf, M. D., Chairman) May 1966.
3. Jerome Bruner, *Toward a Theory of Instruction*, Norton, New York, 1968 (Paperback)
4. George Miller, Ed., *Teaching and Learning in Medical School*, Harvard University Press, Boston, 1962.
5. Bruner, *op. cit.*, chap. 6.
6. *Ibid.*, p. 155.
7. George Packer Berry, "Medical Education in Transition" in *Medical Education Today*, published by the J. Med. Educ., Chicago, 1953, p. 105.
8. It is astonishing that a school with this much floor space should have such haphazard and literally makeshift classroom areas.
9. Bruner, *op. cit.*, p. 42.
10. Curriculum Committee, HMS, Proposed grading system for the core curriculum of the first and second year, January 4, 1969.



TUFTS UNIVERSITY SCHOOL OF MEDICINE

by WILLIAM F. MALONEY, M. D., DEAN

TUFTS University School of Medicine and the federation of teaching, research, and service institutions making up the Tufts-New England Medical Center and allied programs extending from Maine to Mississippi present, in the history of their development and involvement, a multiple paradox. The ultimate paradox, of course, is that this small medical center in the South Cove, or Chinatown, section of downtown Boston has been able to accomplish so much with so little.

The histories of the School of Medicine and the School of Dental Medicine are closely intertwined and anything but dull. The two schools share the same buildings, the same basic sciences faculty, and to some extent the same clinical teaching facilities. Their records equally exhibit their long-term capacities for high productivity of health manpower, scientific and social innovations in the fields of basic, clinical, and action research, and

financial brinksmanship. In this latter respect, both the Medical and Dental schools offer examples of the capacity of living organisms and organizations for survival, and also of a free society's shortcomings in adequate support of valuable humanitarian and educational resources.

If a single unifying theme had to be selected for a brief sketch of the Tufts adventure in medical education, it would have to be the University's outstanding service to society as a community and regional source of medical manpower. Throughout much of the 20th century, Tufts has been and still remains, in somewhat lesser degree, the main source of practicing physicians and practicing dentists in Massachusetts and New England. An American Medical Association survey of living medical alumni in 1967 showed Tufts ranking eighth among private and fourteenth among private and public medical schools in the production of physicians during the last half cen-

tury. It was simultaneously noted that Tufts was one of twenty-three schools with medical graduates in every state, and "more physicians in Massachusetts, Maine, New Hampshire, and Rhode Island are Tufts' graduates than any other school." The record of the School of Dental Medicine, the principal source of dentists in the Northeast, is comparable.

To this contribution of health professionals, we can add other distinctive values that have brought Tufts national recognition:

First, a tradition of community service established by the oldest institution in the medical center. The Boston Dispensary, founded in 1796, is the oldest medical charity in New England and one of the oldest medical services in the United States offering home care for the sick poor. The Dispensary moved to its present location in the South Cove in the mid-19th century and thereafter established itself as the

city's leading private walk-in clinic, with services adapted to the needs of the working class and medically indigent. It became a leader in both the scientific and social advances of medicine that characterized the early 20th century, including the establishment of clinical pathology and x-ray laboratories, the employment of clinic nurses and social workers, and the establishment of one of the first nutrition clinics, one of the first prevention-oriented, diagnostic (health) clinics, and a venereal disease clinic that became a national model. In 1958, the Dispensary, now a part of the New England Medical Center, added a Rehabilitation Institute.

Second, the development, from 1931 on, of the first regional medical education and service program in the United States. William Bingham II of Bethel, Maine, provided the funds and Drs. Joseph H. Pratt and Samuel Proger the leadership in linking the rural physicians and community hospitals of Maine with the Pratt Clinic-New England Medical Center Hospital, built in 1938. The program emphasized continuing medical education for practicing physicians, improvement in the quality of medical care in community hospitals, a system of *locum tenens*, visiting consultants, and patient referrals allying community physicians and medical center specialists, with parallel development of the Center Hospital and Maine regional hospitals as diagnostic, treatment, and teaching centers. In 1944, Surgeon General Thomas Parran of the Public Health Service recommended to Congress that it adopt a nationwide plan of regional hospitalization based on the Bingham Program. The kind of regionalization originated in the Bingham Program was promoted in principle in the Hill-Burton Hospital Survey and Construction Act of 1946, but was not made a requirement of community hospital planning and organization and, lacking financial incentives, consequently languished until the Regional Medical Programs legislation of 1965.

Third, the establishment in the Flexnerian "center of excellence" mode of the New England Medical Center as a small but strong base of training and research in the basic and clinical sciences, emphasizing laboratory and hospital-based practice focused on major and complicated acute and chronic disease in children and adults.

Fourth, the stimulation exerted by the Medical School's Department of Preventive Medicine for a national program of community health action centered on the needs of the impoverished Negro in urban and rural areas. Under the leadership of Drs. H. Jack Geiger and Count D. Gibson, Tufts in 1965 introduced the country's first OEO Neighborhood Health Center at Columbia Point in Boston; beginning in 1967, Dr. Geiger accomplished the more difficult task of establishing and operating the Tufts-Delta Health Center in Mound Bayou, Mississippi, an all-black community and now a teaching center 1500 miles from home. The Office of Economic Opportunity now supports approximately 50 such Neighborhood Health Centers. Each is an experiment in community-based comprehensive health care and in the involvement of medical school in a community-based service seeking to break the cycle of poverty and ill health. Each also seeks to activate the community in efforts aimed at self-determination of its future. In each of these health centers, the University and its trustees have obligated themselves to provide a community service.

Fifth, the loyalty of Tufts' medical (and dental) alumni. The bonds one may feel toward one's alma mater are difficult, if not impossible, to quantify. From place to place and individual to individual, loyalty may be conspicuous in its presence or its absence. However, if money is regarded as a measure, and it usually is, Tufts' alumni are equal to any. In 1968 Tufts ranked *first* among all medical schools in the United States in the percentage of alumni who participated in financial support of

the school and fifth in total dollars received from alumni.

The above list of contributions and distinctive characteristics could be greatly extended if we were to move from the general to the specific. For example, Dr. Pratt in 1930 conceived and applied the group method of psychotherapy, thought to be — at least until the advent of the tranquilizing drugs in non-institutional control of psychosis — the only original American contribution in psychiatry. It must suffice to say here that the faculty of the Medical Center has actively contributed to the scientific literature of medicine and dentistry for many years, particularly in the fields of protein and enzyme chemistry, hematology, molecular biology, carcinogenesis, cancer chemotherapy, microbiology, oral pathology and oral cancer.

It would be non-objective, and might even be construed as downright puffery, if we were to dwell on Tufts University School of Medicine pluses without mentioning minuses. The latter were rather devastatingly itemized by Abraham Flexner in his famous Carnegie Report on Medical Education in the United States and Canada in 1910; the passage of 60 years has done little more than to institutionalize these weaknesses: The Medical School lacks endowment funds, university financial support, an adequate physical plant, a teaching hospital of its own, and, indeed, most of the material characteristics by which American medical education after Flexner defined the ideal university medical center.

The Association of American Medical Colleges in 1967 placed Tufts among the lowest one-fourth of all medical schools in total annual expenditures, regular operating budget, total expenditures per student, ratio of students to faculty, and basic operating expenditures per student. In these compilations covering 84 four-year medical schools, Tufts ranked ninth from the bottom in total expenditures and third from the last in regular operating budget. Tufts' expenditures were \$3,500 per medical student com-

pared to a national average of \$11,000. It is easy to see why the study classified Tufts as a Have-Not school.

The current Medical School annual budget of approximately \$12 million is derived mainly from tuition, training grants, and federal support of research and the community health program.

One explanation of the Medical School's success in doing so much with so little is that, in contrast to the basic sciences faculty, it has no budget for full-time professors in clinical medicine. It depends on the staffs of affiliated hospitals voluntarily to provide the clinical training of students. Teaching is carried on in nine hospitals with major and three with minor affiliations by a clinical faculty that, except for a few part-time and some token salaries, is not paid to teach. Flexner would not have thought well of this system, implying an inability of the School to control its own clinical education program and objectives; nor do we especially favor it. On the other hand, this system has provided the *modus operandi* by which the Medical School has converted one kind of weakness into one kind of strength. Our affiliations with some of the leading public and private teaching hospitals of Massachusetts and Maine, plus community health centers and home care programs in Boston and Mississippi, and a group practice in Chelmsford, Massachusetts, afford our students an unusual opportunity for a rich and varied experience with outstanding scientists, clinicians, and community health leaders.

Students themselves in their actions seem to recognize that financial resources are not everything in medical education. They accept the pinch of a tuition now running \$2,275 a year. Tufts consistently attracts an entering class (120) with qualifications above the national average and is compelled to reject 13 applicants for every student admitted. Acceptable candidates outnumber available places more than two to one.



Dr. H. Jack Geiger (second from left) gives emergency treatment to malnourished child.

Over all, Tufts University School of Medicine provides an example — in fact, a potent distillate — of the ups and downs, the hopes and fears, of 41 private American medical schools, especially those schools without recourse to large private endowment or state or local subsidy (the federal government has specifically recognized Tufts University School of Medicine as a hardship case).

How did we get this way?

The strengths and weaknesses of Tufts Medical School have been a part of its character from its beginning in 1893. This will not surprise the geneticist. What is of more interest to the environmentalist, however, is that one of the chief characteristics of this medical school is that it established and promoted itself in a community where two other medical schools existed — particularly a large and eminent school such as Harvard. We entertain here an assumption of determination and drive that lies beyond scientific proof, but there are some facts, to be stated below. In any event, what greater stimulus of determination can one imagine than a competitive struggle for existence, unless it be, for the teacher and scientist, a fear of that bottomless pit of contempt that academia reserves for the second rate?

Tufts College itself (it did not become a University until 1955) was founded in 1852 on Walnut Hill in Medford for the purpose of bringing the secular light of higher education into the ministry of the Universalist Church, a heretical Protestant sect drawn largely from hard-working farmers and small businessmen — a sect that, before it attracted larger numbers and became respectable, others often lumped together with “Sceptics, Deists, Atheists, and other libertines.” As one early, interested observer remarked, getting Universalists to see the light was “almost altogether an *uphill* business.” The Medical School, like the College itself, became non-sectarian and devoutly non-discriminatory as to the sex, race, color, or creed of its students.

The original Tufts College charter granted by the state legislature “empowered . . . said College . . . to confer such degrees as are usually conferred by the colleges in New England, *except medical degrees.*” The explanation of this curious exception is not hard for the historian to find. Although the early Harvard Medical faculty, which received the fees of its students, was hardly more than a proprietary school prior to 1869, when Harvard President, Charles W. Eliot, reorganized it as an institution of higher education, Harvard had in the early 1800's established a quasi monopoly in the eyes of Massachusetts law over the academic training of physicians. There were various non-affiliated, “irregular” medical schools, and indeed no law against them. But Harvard was jealous of its prerogatives in the “academic” training of physicians. The charters of Amherst and Holy Cross contained prohibitions similar to that imposed on Tufts.

Determined to rid itself of the exclusion clause, in 1867, Tufts petitioned the legislature for a charter amendment. A representative of Harvard, Dr. Edward H. Clarke, professor of materia medica, appeared before the legislative Committee on Education to fight the petition.

Clarke's argument was in part straightforward. The medical care requirement of the population was said to be about one physician per 1,000 persons. This could be met in New England if only 150 new physicians entered practice each year, whereas graduates from New England already totaled nearly 200 per year. Exclusive of salaries for teachers, it cost \$111 a year to educate a Harvard medical student. If Tufts could do it cheaper, it would be at the expense of quality.

Another part of Clarke's protest followed a serpentine path. It concerned a second proposal in the Tufts petition — to raise the ceiling imposed by the charter on income from endowments from \$20,000 to \$100,000 a year. Clarke's basic position was that Tufts should not have the right to bestow medical degrees because it lacked the resources necessary to establish a good medical school. To give the College such a right might help it attract legacies, but to bestow such a right on every educational institution in the state would cheapen the value of the degree and encourage ignorance and incompetence. The effect of this argument was to deny Tufts the right to seek the resources that he said it lacked.

Fortunately, Tufts then had as its president an eloquent preacher and able polemicist, the Reverend Alonzo Ames Miner, self-educated man who further distinguished himself as a member of the Harvard Board of Overseers and recipient of an honorary Divinity degree from Harvard. Miner rebutted Clarke, stating that it was "absurd for the remonstrants to assume the protectorate of the State in medical affairs." He argued that Tufts should have the same legal rights as any other New England college in order "that the community may enjoy the benefits of that honorable and unrestricted competition which is the chief guaranty of excellence."

The legislature affirmed Miner's position on all counts. Tufts could have a medical school, and it could seek larger endowments.

It was not until 25 years later, however, that the academic hill-climbers in Medford were able to exploit this new right. That year, seven outstanding Boston physicians in private practice, three of them Harvard medical graduates, withdrew from the Boston College of Physicians, a non-affiliated, proprietary group, and sought the academic shelter of Tufts as a means of elevating educational standards and combating commercialism. This "Original Seven" offered the College, itself a struggling institution, an interesting proposition: a medical school in Boston operated at no cost to the College. The faculty at first shared students' tuition, but later the College assumed control of income.

THE original Tufts College Medical School was established on Boylston Street. Its first class had 80 students. The School developed a four-year course with the fourth year serving as an internship. Candidates were required to be graduates from accepted high schools or pass an entrance examination. This lack of a requirement for college preparation placed Tufts a cut below Harvard and Johns Hopkins, which also established a medical school in 1893, but it made the school particularly attractive to many New England residents. The first dean, Dr. Albert Nott, said the purpose of the school was to train competent general practitioners; Nott deplored the fact that too much time was being devoted to the "so-called specialties."

It was consistent with the Tufts Medical School's purpose in its formative years that it affiliated with the Boston Dispensary, as well as with Boston City Hospital (one service) and other hospitals. In the beginning, its faculty and students had some access to Massachusetts General Hospital patients but this relationship did not survive.

By 1906, thirteen years after its founding, Tufts was a prosperous medical school and returning, incred-

ibly enough, a profit to the College. It had a faculty of about 100 and a student body of about 400. It was by then the largest medical school in New England and the seventh largest in the United States as measured by physician output.

Its capacity for compatibility with Harvard had been clarified. Harvard was interested in training scientific investigators and teachers. Tufts, as Nott said, trained the family physicians of New England. In the next generation, the chance became better than even that a Tufts graduate would answer if a random call were made to the nearest medical practitioner in Massachusetts (it would now be a little over one in three).

Paradoxically, while we now can recognize that Tufts made a professionally honorable and socially responsible choice, its family and community service objective in the next half century became a victim of the countervailing trend to make medicine more scientific, scholarly, and specialized. The desire of Dr. William Henry Welch, Flexner's idol, to move medical education in this direction was a rational one; from the standpoint of knowledge and talent, high quality in medical practice was frequently conspicuous by its absence. Yet the success of this intellectual trend at Tufts, as elsewhere, ultimately had the negative effect of undermining the availability of primary and comprehensive care in the community during a time when the public demand for such care was escalating.

The leader in the reform of American medical education, as every medical school boy knows, became Abraham Flexner, a Johns Hopkins graduate and educator first employed by the Carnegie Foundation for the Advancement of Teaching and then by the Rockefeller-endowed General Education Board. Medical educators have become so accustomed to honoring Flexner and embracing his concept of high quality that they have generally overlooked certain unfortunate aspects of his insistence on pursuit of the Johns Hopkins model of a universi-

ty medical center as demonstration of the true faith in medical education.

Flexner's lack of sympathy was one thing Harvard and Tufts enjoyed in common. This is a matter of record. Because Harvard lacked a full-time clinical faculty and did not have a hospital of its own, but instead spread its self-supporting clinical faculty loosely among several institutions, Flexner consistently opposed any large Rockefeller gift to Harvard Medical School until finally the Rockefeller Foundation took the matter out of his hands and redefined it as support of the Harvard School of Public Health.

In the great medical education house-cleaning beginning in 1910, Flexner recommended that Tufts Medical School be either closed or merged with Harvard. Flexner pointed out that 85 percent of New England medical school graduates were New England residents. He held that the region was "badly over-crowded" with physicians. Raising standards for basic science education and medical licensing, he said, would reduce the number of physicians and improve their quality. It is noteworthy that he attempted no evaluation of the quality of care, or surveys of community needs or health consumer attitudes. The Flexner doctrine tended to foster the notion that anyone not in a center of excellence, or anything not done in a center of excellence, was second rate and therefore unworthy of consideration. Tufts remained uncowed by the Flexner edict that Tufts must go. One element of the faculty did make an effort to carry out a merger to be known as the Harvard-Tufts Medical School, offering, interestingly enough, Harvard degrees to those who met Harvard requirements and Tufts degrees to those who did not. Such a two-class system was hardly attractive from either viewpoint. The cat was not disposed to lie down with the mouse, and the mouse had its own thoughts about being swallowed. The scheme backfired, and the disaffected Tufts group resigned. The vast majority of



Nurse's aide takes pulse of patient in backcountry shack.

the Tufts medical faculty disagreed with Flexner and, from our present-day vantage point, deserve a fresh wreath on their graves for integrity and courage. It was Flexner's proposal, remember, to reduce the 150 American medical schools then in existence to 31, thus cutting physician production from 5,000 to 2,000 a number that could be permitted to rise to 3,000.

Had the differing missions of medical schools been given more weight, had more institutions been encouraged to bring themselves up to adequate standards, and had the needs of the community, particularly for preventive medicine, been better recognized by medical academicians, the pressure on existing medical schools today to expand their classes might not be so great, and the Bureau of Health Manpower might not be so embarrassed by demands for aid far in excess of available federal resources. In terms of responsibility to the community, meaning attention to the delivery of a good quality of health care services in sufficient quantity, it is now possible to question whether the Flexner reform of medical education was carried out wholly in the public interest. The supporting evidence is Tufts.

Flexner's recommendation that Tufts literally be "wiped off the map" notwithstanding, the American Medical Association Council on Medical Education in 1910 listed Tufts as one of 73 Class A medical schools. The institution then began a long uphill fight to remain first class and meanwhile produce the physicians providing the bulk of family medical care in Massachusetts and New England. Regularly, and of course, wisely, it responded to AMA pressure during the next 25 years — to require first one and then two years' college preparation or its equivalent in premedical courses given by the Medical School, to do away with this premedical course competition with college preparation, and finally, in 1935, to accept only college graduates.

It was fully expected that raising eligibility requirements would reduce applicants and thus bring Tufts' large class size under control. In 1924, the entering class numbered 145. In the long run, and even though tuition was repeatedly raised to keep up with costs, such restrictiveness only served, it seemed, to increase the demand for entrance. The trustees were not unhappy with this trend, since the College had its own financial problems and tuition revenue from medical students was important. Under direct threat of loss of accreditation, the Medical School reduced its entering class to 100 in 1936, and once more raised its tuition, this time to \$500. Since then class size has risen to 120 and tuition has almost quintupled.

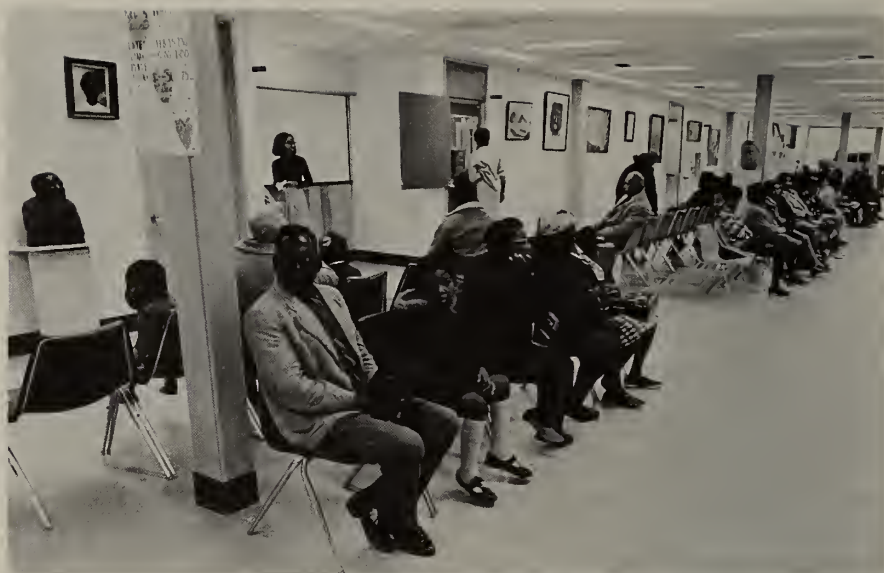
Flexner criticized Tufts for not having a teaching hospital owned and operated by the University. This is still so. A new line of development began in 1930, however, when the Boston Dispensary, Boston Floating Hospital, and Tufts Medical and Dental Schools affiliated as the New England Medical Center. The Center was conceived as a base of operations for the Bingham Program, mentioned earlier. Bingham funds became a major source of its support at that time.

The present New England Medical Center Hospital, a 374-bed complex, is the outgrowth of a 20-bed diagnostic ward established in 1931 by the Boston Dispensary as a place where Dispensary physicians could work up private patients. This unit eventually developed into the Pratt Clinic-New England Medical Center Hospital, research-oriented teaching institution offering New England physicians a highly specialized referral service. The Hospital's full-time, salaried staff constitutes the core clinical faculty of Tufts. Several doctors who came to work in this new center were from the staff of Massachusetts General Hospital and from Harvard. Their qualifications were impeccable. The moving spirit of this enterprise was, and still is, Dr. Proger, chairman of the Tufts Department of Medicine.

The New England Center Hospital, when it came into being in 1938, had less than 100 beds and could handle only small numbers of patients and students, but it grew to become a compact teaching hospital with a first-rate staff, a well-equipped facility with a solid research program, although not a complete one in all disciplines. The small pediatric hospital, the Floating, was of equal caliber. The parent, the Boston Dispensary, then still flourished; its volunteer staff of 250 physicians and surgeons saw more than 145,000 patients a year in morning, afternoon, and evening clinics. In addition, physicians assisted by fourth-year medical students were making 40,000 home visits a year.

The purpose of the New England Medical Center was stated to be "the training of medical students and for the training of family doctors for the smaller communities in New England." But it was a period in which medical specialization and the focus on intellectually challenging, in-hospital study of disease were orchestrating the swan song of community-minded general practice.

In the years immediately following World War II, Tufts' interest in community and regional medicine



Main lobby of Tufts-Delta Health Center.

lost momentum. There were doubtless many reasons — the rewards of specialization, the orientation toward laboratory research, the decline of private medical charity, the rise of categorical sources of support. One setback, indicated previously, was the Hill-Burton bill. Actually, the bill proposed to do many things besides build hospital beds, and it did do other things. The act, as passed, however, endorsed the development of regional medical care systems such as the Bingham program in principle but hindered them in fact by failing to offer financial aid in implementation. As we learn again and again, interest follows money.

Tufts, like many other privately supported medical schools, always has been a hardship case. What seems to have been a sensible working relationship of the institutions allied in the New England Medical Center became more difficult as each found itself caught in the inflationary spiral. Costs shot up, but because of the staff and space bind, services did not rise commensurately and capital was not forthcoming to bring off a grand-design development plan related to urban renewal, even though prospects were considerably brightened by promises of federal aid for teaching facilities. Tufts' old distinction of being the only medical school in the country

not receiving support from its trustees continued among its liabilities. The New England Medical Center Hospital was busy and self-supporting, primarily as in-patient services for paying patients with acute or complicated illnesses, less actively in the obsolescent area of medical charity. The primary lack was money. The Hospital, like the school, became heavily dependent on research grants for staff support.

In all that happened Tufts' traditional capacity to project community interest in the training of physicians who would provide primary care dwindled. Only one bit of data is necessary to demonstrate this. Of 4,719 Tufts medical graduates alive at the end of 1967, only 1,009 or 21 percent, were general practitioners. This is about the same proportion as for all medical schools (22 percent). All the rest had become specialists; some of these, to be sure, profess an interest in family medicine, but most are not socially or predominantly committed to its continuous, easily accessible, and systematic supply.

Daniel Funkenstein, assistant professor of psychiatry at Harvard, poignantly summarized the situation in one sentence when he said: "The difficulty is that medicine has been unable to retain the chief values of one era while developing the new values of the next." Medical education has moved from the art to the

science, the general to the special, the community to the institution, from the whole man to molecules. Now, in the last five years, the wheel has come full circle, and we are beginning to redefine our social responsibilities as medical educators.

In doing so, the present Tufts medical dean sounds somewhat like the first. This is not so much because we want to go back to training general practitioners as such, or because the technicization of medical care occurs at the expense of attention to personal and ecological factors. Rather, it is because we are interested in rebuilding, or relocating, every physician's interest in the whole social system under which medical care will be organized and delivered. If we were not interested, it would be because we are deaf, dumb, and blind to the interests expressed by some of our brightest medical students and the society whence they come.

We have moved, as many of us recognize, into the era of community medicine; at least that is where our head and neck are, although a large part of the medical education organism remains — as much of it should and must remain — in the basic and highly clinical sciences. To the well-established dimensions of teaching, research, and patient care, we are attempting to add a fourth: community service.

As we can see from Tufts' own history, community medicine is anything but a new discovery, here or elsewhere in the world. Its modern impetus appears to have come from the civil rights movement beginning in the mid-1960's. It was at this time that the amount of social disorganization, poverty, and ill health resulting from the Negro migration from the South to the North and West was first generally recognized. It was at this time that adequate medical care as a human right was first accepted in federal legislation, specifically in the Comprehensive Health Planning amendments. It was at this time that Dr. Geiger had the idea of importing the concept of community-based, team-operated

teaching health centers from South Africa. The Tufts Department of Preventive Medicine and the Office of Economic Opportunity provided him the opportunity to undertake this development in health centers in Massachusetts and Mississippi. Tufts University and its School of Medicine accepted the responsibility for this program. Its political future looks good, despite the austerity now permeating the Washington fiscal scene. It is now recognized that this is one program of demonstration and experiment that is succeeding. There are now 50 of these health centers in the United States, and hundreds more seeking approval and funding.

This emphasis is having some curious effects at Tufts; it is not merely that the classic, and classically overlooked, Department of Preventive Medicine is being renamed the Department of Community Health and Social Medicine, nor is it so much that this department is well populated with clinicians and allied workers who staff the centers. One singular effect is that this department makes up about 33 percent of the Medical School budget. Thus, our Preventive Medicine stepchild has become an economic as well as intellectual giant.

Consistent with Tufts' deeply rooted ideas of improving community medical care and regionalization of high-quality services is the concept of a medical education program that itself will be regional, or decentralized. Plans integrating curriculum changes and development of an expanded physical plant call for an increase in class size from 120 to 160. The facilities of the New England Center Hospitals will not be sufficient to train a student body of the size contemplated. Thus, we will progressively cease to be a Medical School centered on Harrison Avenue, in the South Cove area, and more and more become one operating in a dozen places. Indeed, it may become more appropriate to think of us not as a university medical center, but as a non-center, as a university medical consortium, or per-

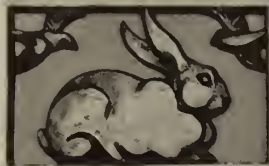
haps, better still, a magnetic field in medical education.

This trend is already discernible not only in the fact that we send medical students and faculty to the health centers in Columbia Point and Bolivar County, Mississippi, but also to a wide spectrum of affiliated hospitals. These include Boston City Hospital, Boston Veterans Administration Hospital, Lemuel Shattuck Hospital, Boston State Hospital, St. Elizabeth's Hospital, St. Margaret's Hospital, Newton-Wellesley Hospital, Jewish Memorial Hospital, Providence Lying-In Hospital, and Maine Medical Center in Portland, as well as others. We also are affiliated with the Chelmsford Medical Associates, a private practice group, and the Community Mental Health Clinic in Boston.

From this, it is evident that the Tufts University School of Medicine is neither an ivory tower nor a house of cards. It, at its peak of achievement, has been more susceptible to function than to form. At any rate, it does not seem to have had any problem that money would not solve. It has certain distinctions, on the other hand, that money could not buy, and, as a matter of fact, some virtues that arise, if not from poverty, at least from a keen desire to rise above it.

The history is one of symbiosis — of the intimate living together of dissimilar organisms in a mutually beneficial relationship. If one were to attempt a profile epitomé of Tufts Medical School, it would be this: It has adapted to the new and uniquely American definition of university's function — namely, to the centuries-old purpose of creating, storing, and transmitting knowledge has been added the university's responsibility to engage itself directly in the application of that knowledge for society's benefit, so assuring that the students it educates continue to learn and apply their learning for the good of people. In this way, we hope to recapture the best of the past in combinations with the best of the new.

TO THOSE WHO GIVE THEIR LIVES



FOR THE WELFARE OF MANKIND

AMELIA PEARBODY SC

IN DEFENSE

of MEDICAL RESEARCH

by SAUL BENISON, PH. D.

SOMETIME ago a cartoon appeared in the *New Yorker* showing a small, harried looking man surrounded by men and women at a large festive dining table. At one end of the table a matron is pointing to the little man explaining to her companion, "That's Professor MacDonald, all he knows are facts." Historians, as the keepers of the memory of man, seek out, store, and preserve the facts. Unfortunately, they also have the nasty habit of telling whoever will listen what the facts mean. Frequently they are mistaken or wrong. Unlike physicians, they have not yet invented a clinical pathological conference to tell them when they are in error. I am an historian and the reader is fairly warned.

In 1866 Henry Bergh, the scion of a wealthy New York merchant, appalled by the wanton cruelty he saw displayed towards animals in New York City streets, founded The American Society for the Prevention of Cruelty to Animals. Eight years later, motivated by the same humanitarian feelings, he joined with El-

bridge Gerry and John D. Wright and organized the New York Society for the Prevention of Cruelty to Children. These societies were not the first stirrings of humanitarian effort in the United States. They were, however, the first organized attempts to cope with the phenomenon of cruelty in the country.

Humane societies appeared in the United States at a time of increasing industrialization and mechanization — a process that had profound effects not only on human life, but on animal life as well. I would like here to give examples of some of these effects. In the last half of the 19th century the railroad network was extended to the west coast, and, in the process the American frontier disappeared. One of the central features of this development was the destruction of the vast buffalo herds of the great plains, in part to feed the crews laying railroad tracks, but also as a measure to subjugate the Indians who inhabited the land and depended upon the buffalo for food and shelter. During this same period, the western railroad network in-

creasingly began to transport cattle from the great plains to Chicago where assembly line methods of slaughter, combined with such technological developments as the tinning of beef and the refrigeration car, helped make that prairie city the butcher to rapidly growing eastern urban centers. The main efforts of humane societies however, were not immediately directed to the cruelties attendant on these developments. Members of humane societies were little concerned with the epizootics that ravaged cattle, horses, and hogs, or with the problems of stock that died for lack of shelter and fodder on the plains. Instead they were engrossed in mitigating the cruelties that individuals practiced on animals in cities. They devoted themselves to apprehending and prosecuting cruel offenders; providing watering places, rest farms, shelters and hospitals for abused and sick animals; and most important developing educational programs designed to instill tenets of humane behavior in children. By 1910 there were 434 such anti-cruelty societies in the United States. Of these, 247 were organized societies for the protection of both animals and children, while 131 were founded solely for the protection of animals.¹

The anti-vivisection movement, which opposes the use of animals in medical experimentation, has its roots in this broad humanitarian movement. Although separate in organization, anti-vivisectionists initially drew their sustenance and support from the membership of humane societies — especially from middle class women. The industrialization and mechanization that contracted the world of animals, widened the world for the middle class woman by providing her with machines and prepared foods that increasingly released her from the tedium of domestic duties. She in turn devoted a good portion of her new found leisure to humanitarian work. Such activity was not only personally gratifying, but also gave her the opportunity to enter the world of

politics as critic and most important, in a socially acceptable manner.

Henry Bergh, who helped father the ASPCA and the Society for the Prevention of Cruelty to Children, can also be called the father of the anti-vivisection movement in the U.S. — although his first child was stillborn. In 1867 Bergh presented an anti-cruelty bill to the New York State Legislature that included a proviso against animal experimentation. The bill passed in the legislature but Bergh failed in his purpose because the New York State Medical Society succeeded in tacking on a provision to the final clause of the bill which read, “nothing in this act shall be construed to prohibit or interfere with any properly conducted scientific experiments or investigations, which shall be performed under the authority of the faculty of some regularly incorporated medical college or the University of the State of New York.”²

What motivated Bergh in these efforts is unknown. There was precious little medical experimentation in New York at the time. It is clear, however, that opposition to the use of animals in medical experimentation was part and parcel of his thinking. In 1880 Bergh returned to the fray and introduced a new measure that has since been characterized as the first American Anti-Vivisection Bill. It read:

Every person who shall perform or cause to be performed, or assist in performing, in or upon any living animal, an act of vivisection shall be guilty of misdemeanor. 2. The term vivisection used in this act shall include every investigation experiment, or demonstration, producing, or of a nature to produce, pain or disease in any living animal including the cutting, wounding, or poisoning thereof, except when the same is for the purpose of curing or alleviating some physical suffering or disease in such living animal, or in order to deprive it of life when incurable.³

Bergh's new bill was no more suc-

cessful than the first. It aroused such wide scale opposition on the part of medical organizations that it was killed in committee. Three years later, however, the first American Anti-Vivisectionist Society was founded in Philadelphia with the stated object of restricting and preventing the injudicious and needless infliction of suffering upon animals under the pretense of medical or scientific research. In the years that followed the anti-vivisectionist movement remained moribund. It was not until the end of the 19th century, and then largely under the impact of the growing acceptance of experimental physiology, experimental pathology and bacteriology as necessary disciplines in the training of physicians, that the movement took on new life. This life was naturally manifest in the increasing proliferation of anti-vivisectionist societies in various states, but also in an almost continual agitation before state legislatures and the Congress for laws either to regulate, restrict, or abolish the practice of animal experimentation. In the process, the original moral issue of the right to engage in animal experimentation became the cutting edge of a new debate on the validity of contemporary developments in biological and medical sciences. These fears and apprehensions were perhaps best expressed by one of the Presidents of the New York Anti-Vivisectionist Society at the beginning of the twentieth century.

What is the way of salvation?

It seems to me that the only real way to freedom, not only for the sub-human but for the human as well, lies in getting away from the unfortunate and mistaken idea of the germ theory of disease, with its filthy inoculations of poison into healthy blood and tissue. Fundamentally, our work and our battle are there. The insanity of serum therapy is increasing so rapidly that soon no one will be safe from the infection of any and every kind of disease; the blood of the children will

be impure from the hour of their birth, and the certain sure retrogression of the race is bound to follow, since all these results from serum therapy are cumulative, and we have reached the natural but inevitable result of blood pollution by serum therapy, i.e., a degenerated race.⁴

There were other fears which bear comment, there were the fears that experimental medicine raised in the minds of practicing physicians and put some of them in support of anti-vivisectionists. One such physician, Dr. Matthew Wood of Philadelphia, not only questioned the validity of germ theory, he was equally concerned with the changes that research was making within the medical profession. “I hold,” Wood told a Senate investigating committee, “that a man to comprehend medicine in its broad, philosophic entirety must either be an enlightened layman or a physician, knowing every branch of medicine, and not a mere specialist, who sometimes because of the very limitations of his specialty, is inadequately acquainted with but one. The mere medical specialist, even if his specialty includes vivisection should no more be considered a physician than the mere fashioner of boxes a cabinet maker, or the man who merely builds stairs or lays floors an architect. I mention this because I want to emphasize the fact that the medical specialist in vivisection, perhaps more than other specialists is apt to presumptuously exalt his office.”⁵

Initially, these and other issues raised by anti-vivisectionists were contested by individual prominent physicians or medical scientists. Thus in 1896, when the Massachusetts Society for the Prevention of Cruelty to Animals went before the Massachusetts State Legislature for restrictive legislation on animal experimentation, Professor Nathaniel Bowditch of Harvard alerted the Massachusetts Medical Society and secured their support in lobbying against the bill.⁶ In 1900 when Senator Gallinger of New Hamp-

shire tried to push through an act regulating animal experimentation in the District of Columbia, Dr. William Welch of Johns Hopkins invited Drs. William Osler, William Keen, Robert Hare, George Sternberg and other prominent physicians and medical teachers to join him in opposing the bill. Although their testimony effectively quashed Gallinger it did not halt the anti-vivisectionists.⁷ As anti-vivisectionist agitation before state legislatures burgeoned, the necessity for unified measures to cope with such attacks became increasingly apparent to medical scientists and teachers. In 1908 following a savage anti-vivisectionist attack against The Rockefeller Institute,⁸ the AMA organized a Special Defense Committee in support of Medical Research. The Chairman of that Committee was Professor Walter B. Cannon. He served in that position for a period of 18 years and in truth it can be said that during this period he directed the struggle against anti-vivisection in the United States.

The tenets that guided Cannon in that struggle were made explicit by him in an article in the JAMA soon after he took office. They were not solely in defense; they were in fact a ringing affirmation of the right of medical research and experimentation.

In the first place, the investigators object to any step tending to check the use of animals for medical research. They maintain that such interference is not justified by the present treatment of the experimental animal. They declare that the imagined horrors of medical research do not exist. The insane lust for blood, the callousness to the infliction of pain, which are attributed to the experimentors, they resent as most absurd and unjust accusations. Only the moral degenerate is capable of inflicting the torment that the anti-vivisectionists imagine. No one who is acquainted with the leaders in medical research, who are re-

sponsible for the work done in the laboratories, can believe for a moment that they are moral degenerates. The medical investigators further maintain that judgment should be based on knowledge, not ignorance. They rightly insist that their critics are ignorant — ignorant of the conditions of medical research and ignorant of the complex relations of the medical sciences to medical and surgical practice, and they contend that these critics in their ignorance are endeavoring to stop that experimental study of physiology and pathology!⁹

Cannon followed this declaration by formulating a code of laboratory procedures to be adopted by medical schools and research institutes. For Cannon the code served a two fold purpose: first to answer the criticisms made by anti-vivisectionists; second, and more important, to persuade other interested parties that medical scientists were not averse to self-policing and rational regulation.¹⁰ Almost immediately Cannon found himself embroiled in an argument with William James. Shortly after the publication of the code, James, in a letter to the *Boston Transcript*, attacked medical scientists for fighting against regulation of animal experiments.

Cannon's outrage is perhaps best expressed in a letter he wrote to Dr. William Keen, then the dean of American surgery.

As soon as I saw the copy of the letter published in the *Boston Transcript* I at once wrote to Professor James and informed him that he was mistaken as to the attitude of the laboratories toward regulation, and gave him the facts. He has since informed me that he did not know that the laboratories were working under such regulations as I cited. My correspondence with him is now in the hands of Harvey Cushing. I have answered him further but in an impersonal way in an ad-

dress which I gave before the Massachusetts Medical Society and which probably will be published in the *Boston Medical and Surgical Journal*. While I recognize that anything which I write is certain not to receive the attention which Professor James' letter will receive I hope that the information which I have given him may be used to offset to some extent the mis-information which he has made prominent.¹¹

Cannon's remonstrance apparently had little effect. Several months later he informed Keen.

After my correspondence with Professor James last summer, calling his attention to mistakes which he himself later admitted, you will be interested to know that he has permitted his letter to the Vivic-section Reform Society to be sent out unchanged, as a small pamphlet by that society. I have not yet had opportunity to call his attention to the failure on his part to stick close to the facts, though it seems to me that after his strictures on the physiologists I can do so with some force.¹²

Keen was not as even tempered as Cannon, or even willing to carry on the debate privately.

"I have decided," he told Cannon, "to write a letter to the *Journal of Zoophily* and also to the *Abolitionist*. I am not willing to rest under the imputation of falsifying facts — in plain language, of lying. I am much astonished at Prof. James."¹³

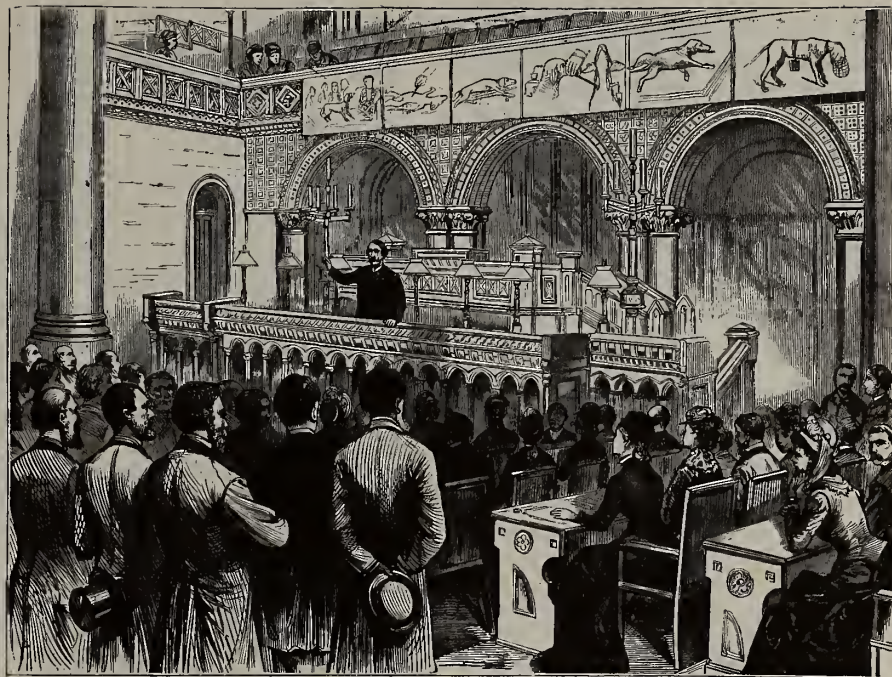
Initially, the adoption of Cannon's code for laboratory experimentation by medical schools proceeded slowly because the secretaries at the offices of the AMA had inexplicably neglected to post them. When Cannon discovered this oversight he personally circularized the deans of 79 medical schools with the code.¹⁴ In March of 1910, in a letter written to Governor Hughes of New York, Cannon told of the re-

sults of his circularization of code rules.

Already these rules are adopted and enforced in the laboratories of 37 medical schools and institutes, including the largest; already 22 other medical schools have asked for more copies of the rules and have expressed a willingness to cooperate with the Council. Before the year ends these regulations will probably be enforced in all the medical laboratories in the United States. It is the conviction of members of the Council that the regulations probably do not change in any respect the already careful conditions under which animal experimentation is carried on; they do indicate, however, to new-comers in the laboratories and to interested and intelligent people, the intent of the investigators and the precautions which they take against suffering.¹⁵

Basically Cannon's work for the Council for the Defense of Medical Research was both educational and political. I would like here to speak briefly of some of his activities in these areas. One of Cannon's first acts as chairman of the Council was to ask various leaders in the fields of medicine, surgery, physiology, and bacteriology to write authoritative papers for physicians showing precisely how experiments on animals served to advance the practice of medicine and surgery.¹⁶ Some thirty papers in all were written. When they appeared, some members of the AMA thought they were too technical and not popular enough. In reply Cannon pointed out that the original purpose of these articles was to instruct the physician, so that he in turn could instruct the public.¹⁷ In Cannon's view the instruction of the practicing physician was all important.

"As you well know," he told Dr. Keen, "the average physician is not well enough acquainted with the history of medicine to be aware of the



NEW YORK.—HENRY DEBORE ADDRESSING A LEGISLATIVE COMMITTEE ON "VIVISECTION," AT ALBANY.—FROM SKETCHES BY W. PARKER BODDISH.—SEE PAGE 22.

source of the devices he uses almost daily in the treatment of the sick. We felt that it was first of all desirable that the physicians should be instructed. If our papers have been too technical for the physicians, I see no way of obviating that defect except by their further education. Certainly they should be able to read such as has been described in this series. You can see that if we had published simply pamphlets with unsubstantiated statement, written in very popular language, they would not be suitable for the *Journal of the American Medical Association*. We should therefore not have the chance to bring these matters before the doctors of the country, and we should be merely repeating the tactics of the antivivisectionists who put out similar statements without giving exact references to their authorities."¹⁸

Cannon, however, was well aware of the importance of popularization and more especially of using newspapers and large circulation magazines for such purposes.¹⁹ Both he and Keen, who served as his mentor, made extraordinary efforts to per-

suade both editors and publishers to print articles and stories favorable to medical experimentation.²⁰ They were not always successful and once ran into a road block with the editors of both the *New York Post* and the *Nation*. When Keen learned that the road block was Mrs. Henry Villard he went up like a sputtering rocket.

I was told by a very well informed, intelligent woman yesterday that the *New York Evening Post* and the *New York Nation* have practically been muzzled in the defense of vivisection by reason of the fact that the mother of the owner of both these journals is a rabid anti-vivisectionist. This is the more astonishing to me, because both of these journals are such strenuous advocates of journalistic independence. I see myself no difference between the control of a mother and the control of an advertiser.²¹

Pressure, however, was not always a bad thing, especially when successfully brought to bear against a recalcitrant publisher. Several years after Cannon and Keen's run-in with Mrs. Villard, the *Washington Post* published a blistering editorial against animal experimenta-

tion. Cannon and the Council for Medical Research feared that the editorial would lead to a new attempt at national restrictive legislation.²² This time Keen was able to calm their fears.

I dined with Cushing before the S. Weir Mitchell Lecture on Wednesday night and talked with him about the editorial in the *Washington Post*. He was much stirred up about it, because he says that he himself operated in the night on the McLean so-called \$10,000,000 baby and saved its life. Mr. McLean is the owner of the *Washington Post*. Mr. McLean is also under some obligation to Finney, the nature of which I do not at the moment remember, but Cushing is to stir up Finney, and both of them to try and influence the *Post* through the owner of the journal.²³

While much of Cannon's educational work was devoted to the instruction of physicians on the value of medical experimentation, a not inconsiderable portion went to correcting errors of fact as they appeared in various anti-vivisectionist traveling exhibits and journals. In most of these exchanges Cannon contented himself with reciting facts in a dispassionate manner — on several occasions, however, he lost his temper. Once, the *Journal of Zoophily*, an anti-vivisectionist magazine, published a bulletin claiming that Sir Frederick Treves had said that vivisection was of little value to science. In reply Cannon pointed out that the quotation used was out of context and that Sir Frederick was in fact an ardent supporter of animal experimentation, sending a copy of a statement by Sir Frederick to that effect.²⁴ The editor of the *Journal* was not impressed.

"As a loyal Harvard man," he replied, "I am heartily sorry that my university is so prominent in a practice which is typical of an age of materialism, greed, selfishness, competition and war and I hope to live to

see the day when Harvard shall abandon vivisection as something unworthy of an institution which purposes to be the herald of light."²⁵

Once more Cannon carefully outlined what Sir Frederick Treves said. The last paragraph of his letter, however, carried a sting.

Such are the facts in the case.

The Editors of the *Journal of Zoophily* by declaring that "Sir Frederick Says Vivisection is of Little Value to Science," are placed by these facts very definitely in the position of falsifiers of the obvious truth. You, as a "loyal Harvard man," I invite to observe the word which you will find on the three books of the Harvard seal. Lest you may not have noted it, I will inform you that it is "Veritas."²⁶

From the beginning of his work with the Council for the Defense of Medical Research, Cannon believed that educational work against anti-vivisectionists would go forward more expeditiously if the Council was buttressed by an organization of laymen. In this he was guided by the experience of the English Research Defense Council.²⁷ The idea however, would not take root. Keen, for example, thought an organization of laymen would lead to the introduction of extraneous politics that in the end would destroy the council.²⁸ Although Keen's views prevailed, Cannon continued to campaign for his proposal. After World War I he raised the question with Keen again.

I have written to Whipple for his opinion and that of Wilbur and others, regarding the desirability of establishing a lay society for the protection of medical research. It happens that while I was in Chicago last week, we seriously considered the establishment of a popular health journal which would be of interest not only to public-spirited medical men, but also to intelligent and interested laymen. The establishment of the journal would be coincident

with the establishment of sections on preventive medicine in state and county medical societies with a proviso for associate membership on the part of laymen. If this plan goes through, a popular health journal with a very large circulation would be the result. I am rather inclined to think that by diffusing through such channels knowledge of the relations of animal experimentation to preventive and curative medicine, we should accomplish quite as much as could be accomplished by a special organization, and with probably less stirring of fanatical feeling.²⁹

This time Keen offered no objections and Cannon went ahead encouraging young instructors at Harvard to organize such a society.³⁰ I do not know what eventually happened at Harvard but the agitation at the AMA eventuated in the establishment of the magazine *Hygeia*, which serves to this day for the instruction of the lay public on a variety of medical problems.

One of the mythologies about Cannon is that he was naive in politics. He was about as politically helpless as a frugal housewife let loose at a sale in Filene's basement. It is fair to say that Cannon's defense of medical research not only schooled him in understanding the mechanism and process of government but also in the art of pressure politics and political debate. Anti-vivisectionist political debate was about as shrill and fierce as any today. One measure of the ferocity of such debate and the planning of political action against anti-vivisectionists can be gleaned from an early exchange between Keen and Cannon.

Dear Dr. Cannon,

A week ago last night a number of us went to Harrisburg and knocked out the antivivisection bill here. I had the pleasure of hearing myself, with the other advocates of vivisection, designated by a very attractive, and I should think

personally, charming woman, as "hyenas"! I have not, however, borne her any malice as a result of it!

Yours very truly,
Dr. Keen³¹

Dear Dr. Keen,

You have my heartiest congratulations on the success of your efforts at Harrisburg. This morning I learned from Erlanger at Madison, Wisconsin, that a wide-spread effort was being made to introduce legislation quietly in the various states, and that by chance the Wisconsin bill had been discovered. I have written a circular letter giving the main points against such legislation, and urging an active campaign against this hostile legislation. This letter will be sent at once to the deans of all the medical schools in the country, and to the auxiliary members of the Council of Medical Legislation of the American Medical Association. If Erlanger's information is correct, the contest is taking on suddenly national proportions.³²

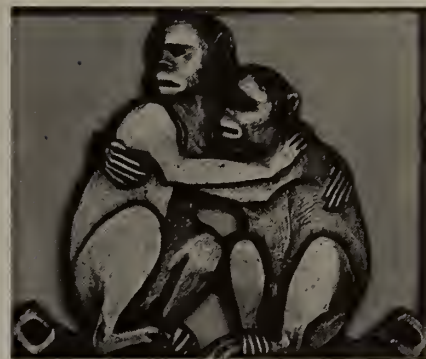
It is of some interest that these particular political warriors were not schooled by politicians but rather by the problems that they faced. The weapons they used were those that the profession of medicine provided. These it might be added were unique for pressure politics. When Keen, for example, learned that President William Howard Taft at Mrs. Taft's insistence had lent his name as sponsor to a meeting of the International Humane Society where several anti-vivisectionist resolutions were to be offered, Keen immediately grasped the import of the move, and using his professional connection as surgeon to Taft called upon him to withdraw. The President agreed.³³ Two years later Keen reminded Cannon that if a similar problem were to come up with President-elect Wilson to call on him for help.

President-elect Wilson I know still better. He is an old friend

for perhaps twenty-years, when he was originally here as Professor of History at Bryn Mawr. I did a slight operation about a year ago on Mrs. Wilson and about seven years ago I operated on two of his three daughters, both operations of gravity, one of them of the utmost gravity. During the operation the hemorrhage was so severe that I almost feared I should not be able to control it. The entire night after the operation I had one of my assistants sitting at her bedside ready for any emergency of secondary hemorrhage. Fortunately both of them recovered and are perfectly well. Such an experience brings a surgeon very close to the father and mother. I can go to President Wilson as I would go to you and talk with him freely in reference to any matter in which I may be interested. I do not specifically know anything of his views as to vivisection, but he is so very sensible a man that I have no doubt he is on the right side. Moreover, I have little doubt that I could persuade him not to take any action which would be hostile to medical research and medical progress. Of course this is for your own eye only, but if you need my help any time, all that you have to do is to call on me.³⁴

Although Cannon understood the need and uses of pressure politics, they did not mesmerize him nor did he let them impinge on his ideals of what constituted the democratic process. Thus when Dr. Hare, one of the early leaders in the defense of medical experimentation, counseled that the fight against the anti-vivisections be conducted exclusively through use of political influence, Cannon voiced his opposition in a letter to Keen.

When we first began our campaign of enlightenment through publications in the *Journal*, he [Hare] wrote to me declaring that we were wholly on the



wrong track and that the way to get results was through the exercise of political influences. I am sure that this is a very undemocratic and hazardous mode of procedure and one which is becoming "less practical" each day, as people are more and more realizing how their representatives have been manipulated by influential individuals. If it seems to you desirable that I make a frank statement of my views to Dr. Hare, I will do so, though I have already done so in answer to the letter he sent me.³⁵

Cannon's experimental work at the time was heavy and absorbing, but he somehow found ways and means to carry out political activity on behalf of the Council for the Defense of Medical Research. On March 5, 1915 he wrote to Keen.

You will be interested to know that a bill prohibiting operations on dogs was introduced into the Massachusetts Legislature and after a hearing had been given, the Committee voted that the petitioners for the legislation be given "leave to withdraw." At the hearing we had an interesting tryout of the new group of young men here in the Medical School — Cushing, Reid Hunt, Joslin, Frothingham, Edsall and myself — with none of the old guard to help. As a first attempt, I think we did very well.³⁶

This particular venture into legislative action had its light moments as a subsequent letter from Cannon to Keen reveals.

March 27, 1915

Dear Dr. Keen:

My best thanks for your kindness in sending me the correspondence with Mrs. Henderson. She is almost too "easy." At the hearing at the State House on the dog bill, she arose and in the blandest and mildest tones informed the legislators that she had in her hands the account of an experiment performed on a dog at the Harvard Medical School by Cushing and Weed — an experiment the account of which was so horrible that she could not bear to read its details to the Committee. She said that she would only mention that the dog made 80 pants a minute, and that the experiment lasted 5½ hours. She multiplied 80 by 60 and that by 5½ and then told the Committee the total number of pants made by the dog during the entire period. The only thing that she drew the line at was the division of the product by 2 in order to determine the number of pairs of pants made by the animal. You should have seen her face when I called on Cushing

to speak. Such a surprised woman you could not imagine. Cushing very clearly explained the purpose of the experiment and furthermore, stated that the animal was under thorough anesthesia throughout the experiment, and that the depth of anesthesia *had* to be so great as to prevent any sort of reflex motion in order that there might be proper and uncomplicated results. When I pointed out later that Mrs. Henderson had failed to state that the first words in the protocol which she mentioned, were "intratracheal anesthesia" which meant to us that the animal was receiving a constant blast of ether-laden air, she said that she understood that they meant anesthesia of the trachea but not necessarily the rest of the body! We shall have more fun with her, I am sure, as years go by.

With best wishes.

Yours Cordially,
Walter B. Cannon³⁷

In the years following World War I Cannon, as an old political hand, generalised the wars against the anti-vivisectionists in California in

1920 and in Colorado in 1923.³⁸ In each instance the legislative struggle was preceded by a campaign of intensive education; in each instance Cannon was successful. These were to be his last campaigns. On February 8, 1926, he confessed to Keen that he had resigned from the Committee for the Protection of Medical Research.

I am going to confess something which may shock you but which I trust you will approve on thinking it over. Some weeks ago I sent to the Secretary of the A.M.A. my resignation as chairman of the Committee on the Protection of Medical Research. My reasons for doing so were that I had served in that position for seventeen years and had begun to feel the burden of it and also that it seemed to me desirable to have a younger man being trained to take over the job while I was still at hand to contribute such advice and information as would be useful. I do not expect to be any the less interested in our campaign, but my move will relieve me of the responsibility for organization and for close watching of the situation over the country. The existence of the Association for Medical Progress led me to feel also that I might relinquish the task which I had been performing with some degree of assurance that it could be done quite safely.³⁹

Dr. Cannon won his many wars against the anti-vivisectionists. I need not tell this audience that in the end he succumbed to the ravages of mycosis fungoides brought on by his exposure to x-ray in his medical experiments. A heartless anti-vivisectionist imagining horrors in Cannon's laboratory might have muttered, "justice for the animals he tortured." I am more impressed by the knowing and loving care that generations of physicians whom he taught and disciplined in the experimental method have since shown their patients.

Hector's Abschied von Henry Bergh.



Dr. Benison is professor of the history of medicine and head of the department at the University of Cincinnati.

FOOTNOTES

1. The history of the Humane Society movement can be followed in Roswell C. McCrea, *The Humane Movement*, New York, 1910; and William J. Shultz, *The Humane Movement in the United States, 1910-1922*, New York 1924.
2. Shultz, op. cit. p. 141.
3. *Ibid.*, p. 142.
4. New York Herald, July 8, 1909.
5. U. S. Senate, *Committee on the District of Columbia*: Hearing on the bill (S. 34) for the further Prevention of Cruelty to Animals in the District of Columbia, Washington, 1900, p. 12.
6. Henry P. Bowditch, *The Advancement of Medicine by Research*, Boston 1896.
7. U. S. Senate, Committee on the District of Columbia, op. cit.
8. George Corner, *A History of the Rockefeller Institute*, New York, 1964, pp. 83-87.
9. Walter B. Cannon, "Medical Experimentation," *JAMA*, vol. 51, (1908) pp. 635-40.
10. Dr. W. B. Cannon Defense of Medical Research pamphlet no. xvi (1909). "I. Vagrant dogs and cats brought to this laboratory and purchased here shall be held at least as long as at the city pound, and shall be returned to their owners if claimed and identified.
II. Animals in the Laboratory shall receive every consideration for their bodily comfort; they shall be kindly treated, properly fed, and their surroundings kept in the best possible sanitary condition.
III. No operations on animals shall be made except with the sanction of the director of the Laboratory, who holds himself responsible for the importance of the problems studied and for the propriety of the procedures used in the solution of these problems.
IV. In any operation likely to cause greater discomfort than that attending anaesthetization, the animal shall first be rendered incapable of perceiving pain and shall be maintained in that condition until the operation is ended. Exceptions to this rule will be made by the Director alone and then only when anaesthesia would defeat the object of the experiment. In such cases an anesthetic shall be used so far as possible and may be discontinued only so long as is absolutely essential for the necessary observations.
V. At the conclusion of the experiment the animal shall be killed painlessly. Exceptions to this rule will be made only when continuance of the animal's life is necessary to determine the result of the experiment. In that case, the same aseptic precautions shall be observed during the operation and so far as possible the same care shall be taken to minimize discomforts during the convalescence as in a hospital for human beings."
11. Walter B. Cannon to Dr. William W. Keen, July 13, 1909. (in Keen-Cannon Correspondence, American Philosophical Society Library, Philadelphia)
12. Walter B. Cannon to William W. Keen, Nov. 12, 1909.
13. William W. Keen to Walter B. Cannon, Nov. 13, 1909.
14. Walter B. Cannon to William W. Keen, Feb. 21, 1910. Walter B. Cannon to William W. Keen, Mar. 12, 1910.
15. Walter B. Cannon to Governor Charles Evans Hughes, Mar. 19, 1910.
16. Walter B. Cannon to William W. Keen, Dec. 13, 1909. One of the first papers in this series was Pres. Charles Eliot's Ether Day address of 1909, a ringing defense of medical experimentation.
17. See the exchange on this point in William W. Keen to Walter B. Cannon, Jan. 3, 1910; and Walter B. Cannon to William W. Keen, Jan. 10, 1910.
18. Walter B. Cannon to William W. Keen, Mar. 12, 1910.
19. The Council for the Defense of Medical Research very early formed a special press bureau to aid them in their work. William W. Keen to Walter B. Cannon, Feb. 14, 1910.
20. Their effort to persuade Norman Hapgood of *Collier's Magazine* and Col. Harvey of *Harper's* can be followed in Walter B. Cannon to William W. Keen, Mar. 11, 1910, March 19, 1910. See also William W. Keen to Walter B. Cannon, Nov. 28, 1910.
21. William W. Keen to Walter B. Cannon, March 7, 1910. Walter B. Cannon to William W. Keen, Mar. 8, 1910.
22. *New York American*, Feb. 17, 1914; *Washington Post*, Feb. 18, 1914; William W. Keen to Walter B. Cannon, Feb. 20, 1914; Walter B. Cannon to William W. Keen, Feb. 26, 1914.
23. William W. Keen to Walter B. Cannon, Feb. 27, 1914.
24. Walter B. Cannon to The Editors of the *Journal of Zoophily*, July 11, 1916.
25. Robert R. Logan to Walter B. Cannon, July 12, 1916.
26. Walter B. Cannon to Robert R. Logan, July 14, 1916.
27. William W. Keen to Stephen Paget, Dec. 17, 1913.
28. Walter B. Cannon to Richard Pearce, Dec. 12, 1913.
29. Walter B. Cannon to William W. Keen, Nov. 17, 1920.
30. William W. Keen to Walter B. Cannon, Nov. 18, 1920. Walter B. Cannon to William W. Keen Dec. 22, 1920; Nov. 28, 1921; Dec. 5, 1921.
31. William W. Keen to Walter B. Cannon, Mar. 10, 1909.
32. Walter B. Cannon to William W. Keen, Mar. 12, 1909.
33. See especially William W. Keen to Walter B. Cannon, June 28, 1910; June 29, 1910; Walter B. Cannon to William W. Keen, June 30, 1910; William W. Keen to Walter B. Cannon, Nov. 3, 1910.
34. William W. Keen to Walter B. Cannon, Nov. 12, 1912.
35. Walter B. Cannon to William W. Keen, Jan. 1, 1914.
36. Walter B. Cannon to William W. Keen, Mar. 5, 1915.
37. Walter B. Cannon to William W. Keen, Mar. 27, 1915.
38. For material on the California campaign see Walter B. Cannon to William W. Keen, May 10, 1920; May 12, 1920; May 17, 1920; William W. Keen to Walter B. Cannon, Oct. 6, 1920; Walter B. Cannon to William W. Keen, Oct. 7, 1920; William W. Keen to Walter B. Cannon, Nov. 13, 1920; Walter B. Cannon to William W. Keen, Nov. 15, 1920, Nov. 29, 1920, July 8, 1921. The Colorado Campaign can be followed in Walter B. Cannon to William W. Keen, Feb. 24, 1922; William W. Keen to Walter Cannon, Feb. 25, 1922; Walter B. Cannon to William W. Keen, Feb. 27, 1922.
39. Walter B. Cannon to William W. Keen, Feb. 8, 1926.

AVUNCULAR INTEREST

The Alumni Association has always taken an avuncular if not a paternal interest in the welfare of the undergraduates at the School. Manifestations of their concern have varied from providing social entertainment such as the dinner and dance for seniors on Internship Announcement Day — to major undertakings, for example, raising the funds which built Vanderbilt Hall and, more recently, their magnificent support of the Program for Harvard Medicine. In recent years the moneys received from annual giving have been channelled where they seemed to be needed most, namely, into student scholarships. These funds are now in excess of \$250,000 a year and are what make it possible for many students to meet the increased costs of living and tuition at Harvard.

In spite of this manifest interest on the part of the alumni in the undergraduates, there has been little actual communication between the two groups. It appears that in fact many students are not aware that most of the scholarships provided have come out of the pockets of their predecessors at the Medical School.

Steps are now being taken to bridge the communications gap. Presidents of the Medical School classes were invited to attend the most recent meeting of the Alumni Council and contributed importantly to the discussion. The students, in turn, have invited representatives of the Alumni Association to attend meetings of the Student-Faculty Council.

Already, two suggestions emerging from these discussions are being put into action. In order to distinguish more clearly the alumni scholarships and, at the same time, to add a slightly more personal touch, it is

proposed to identify each such scholarship with a given class and have it come to the recipient with a letter from the class agent. For example, if HMS 1950 had \$50,000 available, it could underwrite ten \$5,000 scholarships in the name of that class. At least the student will know to whom to be grateful for this beneficence and at best he will be inspired to carry on the tradition after he has arrived at the status of an ex-student.

The second suggestion is to seek a way to bring students into contact with physicians who are engaged in the private practice of medicine in the community. The time has passed when the clinical teaching is the responsibility of the most distinguished practitioners in the community. Now that the clinical faculty has become virtually full-time, the only chance the undergraduate has of getting a first-hand impression of what is involved in the professional practice of medicine away from a teaching center is by signing up for one of the three clinical preceptor-

ships that are now being offered for the first time. These will provide a valuable experience to a limited number, but to our group, it seems desirable for *all* undergraduates to be given the opportunity to see how medicine is practiced by spending one full day at the side of a physician attending his rounds and office practice. It was felt that only by such intimate exposure could real insight be gained into the problems to be faced, the decisions to be made, the frustrations and the satisfactions of medical practice. In no sense is the proposed program intended to influence students toward any particular career. Its aim is merely to fill a gap that has been left by the departure from the clinical faculty of most of the physicians engaged in private practice.

At a time when the demand for medical service is at an all-time high, it is surely appropriate to allow students a glimpse of what medical practice is like.

Within the next few weeks a test run will be made in which each of about a dozen students will spend a day with a Harvard alumnus in his practice; depending on the reactions of all concerned, the program will be broadened to include more students or it will be modified, or perhaps, abandoned.

JAMES M. FAULKNER '24
President, HMAA

REGARDING QUESTIONNAIRES

Of all the devices that have been elaborated to extract information from considerable numbers of persons, the questionnaire may be one of the most pertinent or the most impertinent; the most useful or the most useless. A word filched from the French, it is tersely defined as "a set of questions for obtaining statistically useful or personal information from individuals." British brevity prefers "questionary" with more syllables but fewer letters.

The questionnaire is so ubiqui-

tous, however, it has become such a universal agent of interrogation that early this year the *Bulletin* felt obliged to resort to it to demonstrate its own reckless disregard of consequences — its derring-do in the face of possible reprisals. It decided, as Sir Walter Scott so delicately phrased it, to beard the lion in its den, the Douglas in his hall.

The editors consequently distributed their own mild irritant to see what might be elicited in the way of praise or condemnation, of approval

or disapproval — of hate, to descend to the four-letter level, or of hope. The total number of questionnaires sent to the mailing list of the *Bulletin* was 6304; of these approximately 22 percent came back — not a bad yield considering that no return postage was even suggested.

The information received revealed that alumni notes, of all the *Bulletin's* content, were read first by a large majority of those responding, followed at a considerable distance by the original articles, then the editorials, the “perimeter,” special obituaries, ordinary death notices and letters to the editor. Only four respondents never read the alumni notes; twice that number never read the obituaries and more than five times as many (21 to be exact) never read the death notices. None confessed to never reading the *Bulletin*, but then, they weren’t asked.

The questions requiring a simple “yes” or “no” answer, of which there were 22, furnished a striking testimonial to that Harvard indifference long attributed to bygone generations — perhaps now a matter of negativism or merely a cautious reluctance to agree. All but two of the answers were almost violently in the negative — that concerning appearance, with which only 57 apparently disapproved, whereas 1328 approved, and that concerning “meaningfulness,” with 49 dissenting and 1336 agreeing. In all other respects the majority opinion was no — in regard to more pictures in alumni notes, shorter alumni notes, more school news, more hospital news, more faculty news, more research news, more student news, shorter feature articles, more humorous articles, more student articles, articles oriented to HMS development (almost 50-50), national non-medical

problems (overwhelmingly defeated), and so forth.

Having non-alumni, non-faculty members invited to contribute was approved by 702 voters, disapproved by 398, with 285 expressing themselves with a non-committal “maybe.”

The editors thank the participating readers for this expression of their opinions and will try to meet the non-negotiable requirements suggested.

“DE HUMANI CORPORIS FABRICA”

An editorial published in the *Bulletin* a year ago discussed the twelfth annual report of Dr. Benjamin Spector, former professor of anatomy at Tufts Medical School and now coordinator of anatomical material for the three presently operating medical schools of Massachusetts. The important function of the coordinator is the procurement of a sufficient number of human bodies to try and meet the anatomical needs of the schools in the light of present conditions.

It is significant that from October 1963 to October 1964 116 unclaimed bodies were received from state institutions and 61 were voluntarily bequeathed by their original proprietors, with the required written consent of the next of kin; in the year 1967-1968, of a total of 163 obtained, 55 were unclaimed bodies and 108 were bequeathed. On June 12, 1967, Chapter 353 of the General Laws “An Act Facilitating Ana-

tomical Gifts” had been signed, which legalized the donation of one’s body to a medical school without the approval of the next of kin.

From October 16, 1968, through October 15, 1969, according to the thirteenth report, issued last November, the total number of bodies rose to 208, 45 more than in the previous year, and lacking only two of meeting the stated requirements of the three schools — Boston University 40 and Harvard and Tufts 85 each. Presumably because of the liberalization of the law governing such transactions, the number of donated bodies rose sharply to 149, the total distribution being as follows:

From State Institutions

Boston			
University	Harvard	Tufts	Total
22	2	35	59

Donated Bodies

15	105	29	149
----	-----	----	-----

Total Received

37	107	64	208
----	-----	----	-----

It will be noted that whereas BU fell short of its desired number by three, and Tufts by 21, Harvard, receiving only two from state institutions, exceeded its basic requirements by 22. Perhaps it was due to the influence of the rampant Warren lion on its shield that our alma mater received the lion’s share, almost entirely by donation, reminding one of the parable that unto every one that hath shall be given.

Dr. Spector reports that the needs for the present academic year will be the same as for last year, despite an increased school enrollment and the requirement of at least five cadavers by the medical school of the University of Massachusetts, which will open in September 1970. The obvious conclusion, in view of the changing circumstances, is that if the schools are to have their anatomical needs satisfied, reliance must be placed on donated rather than on unclaimed bodies.

ALONG THE PERIMETER

New Building

UNITEL: Technology to Improve Learning

A new, non-profit corporation to explore the application of technology to improve teaching and learning has been formed jointly by Harvard and MIT. Called University Information Technology Corporation (UNITEL), it is headed by President Nathan M. Pusey of Harvard. Vice President is Howard W. Johnson, president of MIT.

Faculty members of the two institutions are formulating UNITEL's initial program. Planning committees are focusing on three areas:

- development of visual augmentation through closed circuit television transmission between classrooms and residence halls, video records and films;

- coordination of computing resources and the joint use of data and program files;

- collaboration in research on information transfer and the use of the library resources of Harvard and MIT.

The new corporation strengthens the already extensive cooperation between the two institutions. The Cambridge Electron Accelerator and the Joint Center for Urban Studies have been in existence for several years. In addition, collaboration among individual members of the faculties has always been considerable.

UNITEL is building on work that has already been done. For example, Harvard installed a network of coaxial cables in 1965 to provide a multichannel distribution of computer information, television signals, and other electronic data. This system provides a communications link among the lecture and concert halls, classrooms, laboratories and other research centers at the University

and the studios of WGBH Educational Foundation.

Executive director of UNITEL is Dr. Carl F. J. Overhage, professor of engineering and director of MIT's Project INTREX, a program of experiments on the use of new information technology in libraries.

The corporation has ten trustees, five from each institution. Representing Harvard, in addition to President Pusey, are Harvey Brooks, Dean of the Division of Engineering and Applied Physics; Robert H. Ebert, Dean of the Faculty of Medicine; Don K. Price, Dean of the Kennedy School of Government; and Theodore R.Sizer, Dean of the Faculty of Education.

Representing MIT are President Johnson, Jerome B. Weisner, Provost; Robert A. Alberty, Dean of Science; Gordon S. Brown, Dean of Engineering; and John M. Wynne, Vice President, Organization Systems.

Breaking ground for the Laboratory of Human Reproduction and Reproductive Biology are l. to r: Henry C. Meadow, associate dean for financial affairs; Roy O. Greep, Ph.D., director of the laboratory; Robert H. Ebert, Dean, HMS; and Claude A. Vilee, Jr., Andelot Professor of Biological Chemistry.



Groundbreaking ceremonies for Harvard Medical School's Laboratory of Human Reproduction and Reproductive Biology took place on October 27, 1969. The \$4,237,000 building will be erected adjacent to Building A.

Major funds for the construction of the Laboratory have been provided by the Ford, Rockefeller, and Avalon Foundations, and the USPHS. A \$1,500,000 grant from the Rockefeller Foundation will be used to support the faculty and staff for a ten-year period.

The Laboratory will function as an interdisciplinary center bringing together scholars of widely divergent backgrounds and skills with mutual interests in reproductive phenomena. The broad scope of research to be pursued will bring all the modern scientific and technological advances to bear on the solution of problems in reproduction. Research in this area of biomedical science has become of supreme importance to the health and welfare of mankind.

Ellis LECTURE

George E. Burch, M.D., Henderson Professor of Medicine and Chairman of the Department of Medicine at Tulane University School of Medicine in New Orleans, Louisiana, was the fifth Laurence B. Ellis lecturer at the Harvard Medical Unit at the Boston City Hospital.

A native of Edgard, Louisiana, Dr. Burch received his education at Tulane University, which he has served ever since, with but one major interruption for a fellowship in cardiovascular research at the Hospital of the Rockefeller Institute for Medical Research in New York. Dr. Burch's contributions to medicine and medical sciences are many, as a researcher, clinician, teacher, and consultant. A prolific writer, he has published 12 books and monographs, numerous chapters in textbooks, and over 500 original research reports, mostly in the field of cardiovascular medicine and physiology. He has made many contributions to electrocardiography and vectorcardiography, is known for his research on the veins and on the causes and mechanism of heart failure. He was first to prove the deleterious effects of hot, humid environments upon patients with heart disease, and also first to document that prolonged bed rest could benefit the patient with severe chronic heart failure. In more recent years, he has elucidated some of the causes of disease of the heart muscle and has accumulated evidence for the deleterious effects of alcohol upon the heart.

After paying tribute to Larry Ellis '26, Dr. Burch reviewed past work on the cardiovascular effects of known viruses, with emphasis upon the cardiotropic viruses. He then described his own work on Cocksackie B₄ virus, which produces valvulitis in almost 100 percent of mice or cynomolgus monkeys inoculated.

Dr. Burch concluded that to viral infections must be conceded a possi-

ble etiologic role in valvular heart disease, certainly in cases without history or evidence of rheumatic fever. With regard to the pathogenesis of rheumatic fever, it would be wise to keep an open mind and consider the possibility that the streptococcus might act as an adjuvant or conditioning factor for a virus.

ADMINISTRATIVE NEWS

Three administrative appointments and three promotions related to the Faculty of Medicine are announced by Dean Robert H. Ebert.

Those appointed are:

Stephen J. Miller, Ph.D. as associate dean for urban affairs. Dr. Miller also serves as assistant director of the Harvard University Center for Community Health and Medical Care.

Osler L. Peterson, M.D. as acting head of the department of preventive medicine. Dr. Peterson is professor of preventive medicine at Harvard and associate director of studies of the Medical Care and Education Foundation, Inc. of Boston.

Alvin F. Poussaint, M.D. as associate dean of student affairs. Dr. Poussaint is also associate professor of psychiatry and associate psychiatrist at the Massachusetts General Hospital.

Those promoted are:

Joseph W. Gardella, M.D. to dean of students. Dr. Gardella is lecturer on medicine at HMS.

Hermann Lisco, M.D. to associate dean of student affairs. He is lecturer on pathology at Harvard and senior research associate in experimental pathology at the New England Deaconess Hospital.

Bayley F. Mason, A.B. to associate dean for resources.

WHITE FUND BROADENED

To further mutual understanding of medical, social and human problems in the United States and abroad, the scope of the Paul Dudley White Fund has been broadened to include the exchange of both student and faculty personnel. The

Fund has also been renamed the Paul Dudley White Fund for International Studies.

The Fund, initially established by the University in 1955, was of limited scope, providing only for the exchange of faculty personnel.

"Recent experiences of undergraduate medical students from Harvard who have had an opportunity to participate in study programs abroad," according to Dr. Dieter Koch-Weser, associate dean for international programs at HMS, "have pointed up the significant value of such experiences to our students."

Equally important, in Dr. White's estimate, will be the opportunity for the exchange of medical school staffs, at levels from full professors to instructors, and for varying lengths of time ranging to a full sabbatical year.

The value of the bilateral exchange, Dr. White also notes, lies in the fact that knowledge is not a one-way street. He points out that medical knowledge in the U.S. has benefited tremendously through foreign scholars who have come to this country to study.

The funding of the international medical exchange program to this point has come primarily from friends, colleagues, and patients of Paul D. White '11.

At a recent dinner meeting honoring the famed cardiologist and international humanitarian, Dean Ebert disclosed that gifts and pledges to the Fund now stand at over \$215,000.

"Our plans," said Dr. Ebert during the dinner, "are laid in the hope that from the Fund's modest financial beginning, we may be able to increase this resource and thus enable others to move ahead in Dr. White's footsteps."

Correction

In "George Cheever Shattuck: Nestor of Tropical Medicine" (HMAB, Sept.-Oct., 1969) Dr. Shattuck was incorrectly listed as having attended the Browne and Nichols School. He attended the Noble and Greenough School.

PROMOTIONS AND APPOINTMENTS

PROFESSOR

Lewis Dexter '36: medicine at Peter Bent Brigham Hospital
Edward H. Kass: medicine
Jack H. Mendelson: psychiatry
Joseph E. Murray '43B: surgery at PBBH
Richard Warren '34: surgery at The Cambridge Hospital
Thomas A. Warthin '34: medicine at West Roxbury Veterans Administration Hospital

ASSOCIATE PROFESSOR

Joseph B. Alpers: biological chemistry
John L. Bethune: biological chemistry
John R. Brooks '43B: surgery at PBBH
C. Keith Connors: psychology in the department of psychiatry at Massachusetts General Hospital
Werner E. Flacke: pharmacology
Paul M. Howard: psychiatry at McLean Hospital
Howard N. Jacobson: obstetrics and gynecology at Boston Hospital for Women
Ronald A. Malt '55: surgery
R. Grier Monroe: pediatrics
Henry P. Paulus: biological chemistry
Henning Pontoppidan: anesthesia at MGH
Charles A. Sanders: medicine at MGH
Morris Simon: radiology at Beth Israel Hospital
Edmund H. Sonnenblick '58: medicine
Robert G. Spiro: biological chemistry in the department of medicine
John D. Stoeckle '48: medicine at MGH
Alan A. Stone: psychiatry at MGH
Melvin L. Taymor: gynecology at PBBH
Donald P. Todd '44: anesthesia at MGH

ASSOCIATE CLINICAL PROFESSOR

James L. Tullis: medicine

ASSISTANT PROFESSOR

Herbert Benson '61: medicine
Howard L. Bleich: medicine
Matthew A. Budd '60: medicine at BIH
Leonard S. Bushnell: anesthesia at BIH
Stafford I. Cohen: medicine at BIH

Margaret F. Conroy: mathematical biology in the department of radiology
Diane W. Crocker: pathology at PBBH
Michael H. M. Dykes: anesthesia
Michael Field: medicine
Pierce Gardner '61: medicine at BIH
Irma P. Gigli: dermatology
Donald P. Goldstein: obstetrics and gynecology at PBBH

A. Arthur Gottlieb: medicine
Carl A. Hirsch: medicine
Gwendolyn R. Hogan: neurology at MGH
Andrew H. Kang '62: medicine
Warren W. Koontz, Jr.: surgery at MGH
Lee V. Leak: anatomy in the department of surgery
Raphael H. Levey '59: surgery
David C. Lewis '61: medicine at BIH
Philip A. Lief: anesthesia at Robert Breck Brigham Hospital
Edward Lowenstein: anesthesia at MGH
Peter Ofner: pharmacology in the School of Dental Medicine
Earl L. Parr: anatomy
Gerald R. Plotkin: medicine at BIH
Sidney V. Rieder: biological chemistry at MGH
Richard M. Robb: ophthalmology at The Children's Hospital
Peter B. Rosenberger: neurology at MGH
John F. Ryan: anesthesia at MGH
Ira Sherwin: neurology
William J. Shriber: medicine at BIH
John J. Skillman: surgery
John S. Soeldner: medicine
Jurgen Steinke: medicine
Denise J. Strieder: pediatrics at TCH
Kay Tanaka: medicine
Joseph J. Tecce: psychology in the department of psychiatry
Veronica B. Tisza: psychiatry at TCH
Donald E. Tow: radiology
Cynthia M. Wild: psychology in the department of psychiatry at Massachusetts Mental Health Center

ASSISTANT CLINICAL PROFESSOR

Martin A. Berezin: psychiatry
Edward M. Daniels: psychiatry
Lloyd E. Hawes '37: radiology
Arnold H. Modell: psychiatry
Harold W. Rubin: obstetrics and gynecology
Herbert C. Schulberg: psychology in the department of psychiatry
Arthur F. Valenstein: psychiatry

STUDENTS

With the purpose of establishing better communication between Alumni and students, the *Bulletin* invited a representative from each of the four classes to join the Editorial Board.

Those who have accepted these appointments are: Michael B. Millis '70; Robert W. Beart, Jr. '71; Howard S. Kirshner '72; and Lee M. Nadler '73.

It is our hope that these board members will report on news of their class activities and further, that they will solicit original material from classmates.

ATTENDING HMS A Political Experience

The Class of '72 is currently finishing the "core curriculum" and preparing for diverse paths in clinical clerkships, elective courses, and research. Blocks in hematology, gastroenterology, infectious disease, and endocrinology-reproduction, along with courses in aseptic technique and physical diagnosis, kept the class busy during the fall semester. Students have also been attending a variety of tutorials, mostly on clinical subjects, designed to give them insight into areas of specialization. Many 2nd year students participated in the Second Year Show, which is reviewed on this page.

Perhaps most noticeable have been the numerous political activities in which members of the class have engaged. Medical schools have not escaped the political consciousness that characterizes our age, and students have found that attending medical school in 1970 is inevitably a political experience. Whether or not they have come to school, in Vice President Agnew's words, "to proclaim instead of learn," they certainly do not ignore the issues of

their time. These issues involve not only Vietnam and the ghetto, but also the university, the medical school, and the community.

As reported in the last issue of the *Bulletin*, many members of the class joined about 600 other members of the Harvard community on October 15 in standing on street corners and passing out pre-addressed postcards to President Nixon, asking him to end the war in six months. A contingent of students also participated in the November 15 march on Washington. Several students in the class have been publishing a journal entitled "The Red Nucleus," which presents radical views on various issues from the curriculum to Vietnam, from the Harvard strike to HEW blacklisting of anti-war scientists.

In the medical school itself, second year students now sit on all but a few of the faculty committees, and a taskforce of the Student Faculty Committee is working on compromise proposals to permit students on the remaining boards. A student curriculum committee has been actively evaluating the new curriculum

by means of barrages of questionnaires. Interest in community and social medicine seems widespread in the class. During the first year, many students spent time working in neighborhood and community clinics in the Boston area.

The class has also been interested in the issues concerning the new Affiliated Hospitals Center. Last year Dean Ebert spoke to the class regarding plans for the Center, and two members of the class have sat on the Fein Committee, appointed to study the problems of the Fenwood Road area residents who will be displaced by the Center. The class is currently considering whether or not to continue its representation on the committee in view of its lack of mandate and President Pusey's decision to deal directly with the tenants.

Though the coming division of the class between clinical rotations and electives will probably preclude further class involvement in issues, individual students will undoubtedly continue their activities.

HOWARD S. KIRSHNER '72

MOTHER LIQUOR vs. Milk of HUMAN KINDNESS

On December 5 and 6, the second year class presented its annual show, a two-act musical comedy entitled "Rotten to the Core." Before a set depicting the falling pillars of Building A, the cast portrayed the strife and humor of a semi-imaginary first year class at Harvard experiencing a "core curriculum" hastily devised by a faculty fearful of socially-minded students.

The faculty possess a magical "mother liquor," which once transformed them from a herd of grazing asses into brilliant medical professors, and which now gives them great scientific insights, at the expense of "the milk of human kindness." The faculty attempts to protect its secret from patient-oriented students mistakenly permitted to enter the school by an unwary admissions committee.

The students present a professional "Everypatient" in clinics on every subject from birth defects to chronic disease and population studies. A series of "core" lectures, clinics, and labs provide the setting for jibes at teachers, researchers, preachers of social medicine, and student "zoos," "weenies," "money-grubbers," and "radicals."

The plot reaches its climax when the students take over the faculty john, which by chance is the only route of access to the subterranean spring of the mother liquor. The students are then tricked into running to the dean of students' office by the announcement of new handouts for a summer "chopping block," which has been added to the schedule by distraught professors to induce the students to leave with members of the community and an ailing Every-

patient, who dies amidst the bickering of faculty and students. The day is saved and the play ended by the arrival of the Dean, sole quaffer of the "milk of human kindness," who resuscitates Everypatient and unites all in the final song.

The play, directed by Steve Lipson and produced by Marty Kohn, succeeded admirably in maintaining the Second Year Show tradition of ribaldry and faculty character assassination. The impersonations were mostly convincing, especially those of Dean Gardella by Herb Cantril, Dr. Jean Paul Revel by Ned Cabot, and Dr. Fawcett by Gary Soverow. Many of the individual acting feats were excellent; credit must go to Ann Bajart for performing what must have been the best burlesque

in Harvard's history. Jim Frederiksen's music, partly original and partly adapted from obscure musicals, was successful in keeping up the high spirits that prevailed throughout the play. The sets, slides, and make-up were ingenious, and the plot, though showing the several influences of a committee of writers, generally hung together well. Though the ending was a bit abrupt, the spirit of the final song carried it across. The unique aspect of this performance was the phenomenon of a class portraying itself and poking fun at its own traits and differences. This element of self-caricature made the play especially enjoyable.

HOWARD S. KIRSHNER '72

SFC Goal: SOLUTIONS BEFORE CRISES

In response to Harvard Medical students' increasing concern in participating in decision-making processes of the HMS community, the Student Faculty Committee (SFC) has been evolving new goals for itself. It has streamlined some of the tedious detail work of allocating funds, directing student uses of Vanderbilt Hall, and sifting through minor issues and requests from students to faculty or administration and vice versa.

Under the innovative leadership of President Kim Masters '72, attention will be focused on the efforts of four task forces set up this year to investigate major issues of student concern; student affairs, curriculum, admissions, and Harvard and the community. Each task force, made up of SFC members and other interested students and faculty, gathers wide opinion on pertinent problems in its area and presents these to the SFC with concrete proposals for change.

The real test of the task forces' success will be whether their recommendations are effectively responded to by governing bodies with power to bring about change. As in the past, the SFC is not a true governing power; it is an advisory committee

to Dean Ebert and, through him, to other decision-making groups at HMS. It is legitimized and powerful only to the extent that it has adequate student and faculty representation and can put forth its recommendations with the weight of their support. It is hoped that task forces will widen this representation and support.

In an effort to get better faculty participation, the SFC has increased its faculty members from four to eight. Additional channels augmenting student-faculty rapport are Faculty-Student Teas, Tuesday and Thursday at 4:30 in Building A (stop by when you are in the area!), and dinners for students at faculty homes which the Wives of Aesculapius helped set up at SFC request.

Ideally the task forces will evolve what is much needed in universities today: forward-looking proposals before problems become crisis situations and while there is sufficient time, and adequate representation to look at many sides of each issue. If the success of recent efforts to put students on faculty committees is indicative of what will come of new SFC recommendations, the future augurs well.

But many issues before the SFC

will be more complex; the value of written versus flexible unwritten administrative policy regarding admissions, grades, and Harvard's role in the community. Moreover, SFC members, frustrated by escalating numbers of advisory committees and of single student representatives to governing bodies, are realizing HMS's need to review and reform its overall governance mechanisms, as Dean Ebert suggested at an early SFC meeting last fall.

Until the SFC can address itself to this larger problem, and it certainly is an appropriate group to do so, it, like other advisory committees, is perpetrating more elaborate, rather than more efficient methods of governance.

Voting members of the SFC are: K. Frank Austen '54, associate professor of medicine at Robert Breck Brigham Hospital; A. Clifford Barger '43A, Robert Henry Pfeiffer Professor of Physiology; John R. Brooks '43B, associate professor of surgery at Peter Bent Brigham Hospital; Dr. Harvey Goldman, associate in pathology at Beth Israel Hospital; Dr. Joseph W. Gardella, Dean of Students; William V. McDermott, Jr. '42, professor and head of the department of surgery at Boston City Hospital; Dr. Alvin F. Poussaint, associate dean of student affairs; Dr. David D. Potter, associate professor of neurobiology. Student voting members are: Michael B. Millis '70; Stephen P. Raskin '70; Glenn W. Sanberg, Jr. '70; David M. Bear '71; William Koopman '71; Leslie D. Schlessinger '71; Diane Kittredge '72; Kim Masters '72; Orest Hurko '73; and Samuel L. Maxwell, Jr. '73. James J. Feehey '52, director of the medical area health service and Dr. Hermann Lisco, associate dean of student affairs, are non-voting members. All members of the SFC are available and welcome suggestions, comments, and problems from any member of the Harvard medical community.

DIANE KITTREDGE '72
Secretary, SFC

THE WILLIAM O. MOSELEY, JR. TRAVELLING FELLOWSHIPS

THE BEQUEST OF JULIA M. MOSELEY MAKES AVAILABLE FELLOWSHIP FUNDS FOR GRADUATES
OF THE HARVARD MEDICAL SCHOOL FOR POSTDOCTORAL STUDY IN EUROPE.

The Committee on Fellowships in the Medical School has voted that the amounts awarded for stipend and travelling expenses will be determined by the specific needs of the individual.

In considering candidates for the Moseley Travelling Fellowships, the Committee will give preference to those Harvard Medical School graduates who have—

1. **Already demonstrated their ability to make original contributions to knowledge.**
2. **Planned a program of study which in the Committee's opinion will contribute significantly to their development as teachers and scholars.**
3. **Clearly plan to devote themselves to careers in academic medicine and the medical sciences.**

Individuals who have already attained Faculty rank at Harvard or elsewhere will not ordinarily be considered eligible for these awards.

There is no specific due date for the receipt of applications or for the beginning date of Awards except that the Committee requests that applications not be submitted more than 18 months in advance of the requested beginning date. The Committee will meet once a year in January to review all applications on file. Applicants will be notified of the decision of the Committee by January 31. The Committee may request candidates to present themselves for personal interviews.

Application forms may be obtained from, and completed applications should be returned to:

SECRETARY, COMMITTEE ON FELLOWSHIPS IN THE MEDICAL SCHOOL
HARVARD MEDICAL SCHOOL
25 SHATTUCK STREET, BOSTON, MASSACHUSETTS 02115

